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Culturally-Relevant Factors that Influence Healthy Eating among African American College Students

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Culturally-Relevant Factors that Influence Healthy Eating among African American College Students

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at Virginia Commonwealth University.

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CULTURALLY-RELEVANT FACTORS THAT INFLUENCE HEALTHY EATING AMONG AFRICAN AMERICAN COLLEGE STUDENTS

By Danyel Smith, M.S.

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at Virginia Commonwealth University.

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Major Director: Nao Hagiwara, PhD., Associate Professor, and Psychology

Obesity is a national epidemic in the US, disproportionately affecting African Americans, such that the obesity prevalence in African Americans (49.6%) surpassed the national prevalence (42.4%) in 2018. Those same disparities exist at the collegiate level, such that 27.4% of a sample of African Americans college students had obesity, surpassing the national prevalence of obesity (12.1%) in 2018. Diet, an important driver of obesity, is influenced by several psychological, social, and environmental factors. However, cultural factors influencing diet are understudied among African American college students. The overarching goal of the current study was to identify culturally-relevant factors that promote healthy eating among African American college students. Through a convergent mixed methods design, the results indicated that negative attitudes and low priority were significant barriers to healthy eating. Perceived importance predicted healthy eating engagement over and above barriers to engagement. Qualitative data

demonstrated that culture serves as a socialization agent, shaping modeling, exposure, and perceptions of healthy eating behaviors. These culturally-relevant beliefs persist into emerging adulthood. These results serve as formative work to uncovering the specific role of culture in healthy eating behaviors among African American college students.

Vita

Danyel Smith was born on July, 24, 1995 in Norfolk, VA. She graduated from Oscar F. Smith High School in Chesapeake, VA in 2013. She received her Bachelors of Science in Psychology and Bachelors of Arts in African American Studies from Virginia Commonwealth University.

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MANUSCRIPTS UNDER REVIEW

Smith, D, & Hagiwara, N. (Revise & Resubmit). Food Preference as a Signal of Racial Identity.

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Smith,D., Jones, S.C.T., & Hagiwara. N. (2020, April). *Food Choice as a Signal of Racial Identity.* Accepted Poster for 2020 Graduate Student Association Graduate Student Symposium.

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Project Overview

Hippocrates proclaimed "*Let thy food be thy medicine*." Ironically, two thousand years following his statement, numerous Americans are being medicated to address obesity-related illnesses stemming from their food choices (Centers for Disease Control and Prevention [CDC], 2016). In 2017-2018, 42.4% of Americans were affected by obesity (CDC, 2020)—a disease resulting at its' core from an imbalance of energy intake and expenditure (Hall et al., 2019; Romieu et al., 2017). Diet is one critical intervention target for the prevention and treatment of obesity. Healthy eating—and eating in general—has been assessed through a myriad of academic lens including anthropology, medicine, nutrition, public health, psychology, and sociology.

Historically, research on initiation and maintenance of healthy eating has taken a deficit-based approach, focusing on the barriers and lack of resources that exist for an individual or given community. Structural and psychological barriers of healthy eating found in prior research include, but are not limited to, lack of financial or physical access to fresh foods, obesogenic environments, preference for traditional cuisine, and low self-efficacy for healthy eating (Cerin et al., 2011; James, 2004; Liburd, 2003; Moreland et al., 2002; Richards Adams, 2019; Sogari et al., 2018;). Primarily focusing on barriers is one critical knowledge gap in the current literature as it reinforces a dichotomous view of health (i.e., biomedical model of disease), where etiologies of disease are addressed and symptoms are treated, in hopes of ameliorating disease and/or modifying behavior. However, an added emphasis on factors that promote healthy eating allows researchers and clinicians to capture a more comprehensive understanding of how health is created and sustained in the face of challenges (Swan et al., 2016).

There are a few studies, although still limited in number, that have explicitly focused on identifying enablers of healthy eating, such as social support and self-efficacy, perceived health benefits, or a medical event (Franko et al., 2013; Richards Adams et al., 2019; Shaikh et al.,

2008; Swierad et al., 2017). However, these studies focus minimally on cultural contexts, which is the second critical knowledge gap in healthy eating research. There are large racial/ethnic disparities in obesity, such that the rate of obesity prevalence in African Americans is 49.6%, while that in White Americans is 42.2% (CDC, 2020). Thus, it is critical to assess factors that are culturally unique to African Americans and contribute to the racial disparities in healthy eating and obesity. The present research aims to address both knowledge gaps. Specifically, the overarching goal of the current study is to identify culturally-relevant factors that promote healthy eating among African American college students. Examining culturally-relevant factors that promote healthy eating will aid in advancing theoretical and clinical understanding of food-related decision-making among African Americans. Furthermore, research with a cultural lens has the potential to diversify future points of intervention for healthy eating.

Prevalence of Obesity among African Americans

Over the last few decades, the U.S. has been faced with an obesity epidemic (Mitchell et al., 2011; Wang and Beydoun, 2007; US Department of Health and Human Services, 2001). The American Medical Association recognized obesity as a disease characterized by excessive body fat (Pollack, 2013), resulting from an imbalance of energy intake and expenditure (Romeieu et al., 2017). The conventional classification of obesity is based on body mass index (BMI), which is calculated as the quotient of an individual's weight and the square of their height in meters (weight [kg]/ [height (m)]^2). BMI between 25.0 kg/m^2 and 30.0 kg/m^2 is considered overweight, and BMI above 30.0 kg/m^2 -34.4kg/m^2, 35-39.9 kg/m^2, and BMI $\geq$ 40kg/m^2 are considered Class I, Class II, and Class III obesity, respectively (CDC, 2017). In the 1960s and 1970s, only 13% of U.S. adults had obesity (Wang and Beydoun, 2007). In contrast, the obesity epidemic affected approximately 42.4% Americans in 2017-2018 (CDC, 2020). This spike in the prevalence of

obesity can be explained by the epidemiologic transition, which is defined as the shift in causes of morbidity and mortality resulting from modernization and changes in socioeconomic growth (McKeown, 2009). Essentially, the burden of disease has shifted from being caused by infectious diseases (e.g., the measles, HIV/AIDS, tuberculosis) to chronic, "man-made diseases" (e.g., heart disease, hypertension, diabetes).

Although prevalence of obesity has increased in the general U.S. population, there are significant variations in the prevalence of obesity across racial/ethnic groups, with African Americans having the highest prevalence of obesity (49.6%) in 2017-2018 (CDC, 2020). Additionally, among African Americans, obesity is most prevalent in women and individuals of lower socioeconomic status (i.e., education and income level). In 2015, nearly four out of every five Black women had obesity (Office of Minority Health, 2017). The relations among obesity, income, and education level are complex. For African American women, rates of obesity vary by education, rather than income level, such that college-educated individuals report lower rates of obesity (Ogden, 2017). In contrast, African American men with higher incomes report the highest rates of obesity, compared to those of lower income groups (Ogden et al., 2017). Health disparities seen at the population level are reflected in the collegiate level as well. In a nationally representative sample of college students, African American men reported the greatest weight gain during college (Nelson, 2007).

Disparate rates of obesity have serious clinical implications as they correspond with disproportionate rates of life-threatening comorbidities among African Americans. For example, 43.5% of African American men and 44.2% of African American women (compared with 29.6% of White men and 27.5% of White women) have hypertension—a serious risk factor for heart disease and stroke and both leading causes of mortality in the U.S. (Office of Minority Health-

Heart Disease and African Americans, 2016; CDC, 2019). Furthermore, 13.4% of the African American population (compared with 7.3% of White Americans) have diabetes (Office of Minority Health, 2017).

Factors Contributing to Obesity in the General Population

Obesity is a complex interplay of psychosocial, behavioral, environmental, genetic, and emotional factors (Albuquerque et al., 2017). At its most fundamental level, obesity is a result of energy imbalance, with sources of energy intake (vs. energy expenditure) playing a critical role in the energy imbalance that drives obesity (Hill et al., 2012). The quality and quantity of energy intake is influenced by intrapersonal, interpersonal, and environmental factors. For example, previous research has linked stress with adiposity levels. Specifically, chronic stress may lead to prolonged activation of the hypothalamic-pituitary-adrenal (HPA) cortex (Dallman et al., 2003; Ulrich-Lai and Herman, 2014; Youn et al., 2014), which serves as the body's stress regulator. To maintain homeostasis, the HPA Axis releases cortisol, the body's stress hormone, stimulating the sympathetic nervous system. Elevated levels of cortisol in the body accelerate fat storage in the abdomen (Dallman et al., 2003). Furthermore, consumption of high fat foods has been shown to suppress the body's stress response. Thus, nutrition and diet may explain the link between stress and obesity (Dallman, 2003; Jackson et al., 2010). On an interpersonal level, culture plays a significant role in food consumption and health perceptions through modeling, traditions, and conversations (James, 2004). In regard to the environment, research has shown that the built environment can serve as a correlate of obesity risk, including limited access to safe physical activity outlets (e.g., sidewalks, gym facilities, recreation parks; Wen & Kowaleski, 2012).

Due to the prominent role of energy intake in obesity, unhealthy dietary intake patterns are major points of intervention for the reduction of obesity in Americans. The World Health

Organization (WHO) recommends a diet consisting of legumes, whole grains, lean meats, fruits and vegetables, with limited intake of salt, sugar, and fat to promote good health and lower the risk of developing obesity and other chronic illnesses (WHO, 2019). Previous research has identified several structural and psychological factors, which covary by race and influence initiation and maintenance of this healthy eating. However, culture is one major psychosocial factor that may shape perceptions and engagement in healthy eating, yet has not been extensively explored from a strengths-based approach. Understanding structural and psychological factors associated with healthy eating, will shed light on how cultural beliefs regarding healthy eating may be supported by an individual's access, environment, and beliefs.

Structural Factors Associated with Healthy Eating

Built Environment

Physical Access. The availability of physical access to fresh and nutritious foods can influence engagement in healthy eating. Access to a grocery store in close proximity to a household can significantly influence engagement in healthy eating, ultimately affecting rates of overweight and obesity. Specifically, a cross-sectional study examining neighborhood design and walkability found that presence of a grocery store within 1 kilometer of the home was predictive of a lower risk of obesity (Cerin et al., 2011). Additionally, those living in urban and rural areas often report limited physical access to fresh foods due to a low number of grocery stores within a reasonable distance ("food desert," White et al., 2017). For example, a longitudinal study conducted amongst low income African Americans living in an urban environment, showed that risks of obesity increased by 5% with each additional mile traveled to a grocery store (Ghosh-Dastidar, 2015). Among individuals living in rural communities, limited access to grocery stores has been associated with lower fruit and vegetable intake (Sharkey et al., 2010).

Racial residential segregation as a result of institutional discrimination serves as one driving mechanism underlying racial disparities in food access (Bower et al., 2014; Williams & Collins, 2001). For example, Morland et al. (2002) found that there tends to be more full-service supermarkets in predominately White neighborhoods as opposed to predominately African American neighborhoods. As a part of President Franklin D. Roosevelt's New Deal, the Federal Housing Administration was created to increase homeownership in Americans by providing mortgage loans (Jan, 2018). However, this bureaucratic agency institutionalized racial residential segregation by discriminatory policies, known as redlining, which denied mortgage loans to racial minorities, namely African Americans, because they were deemed as credit risks. These discriminatory policies further perpetuated racial segregation. The Fair Housing Act of 1968 banned discrimination in housing; however, the effects of redlining are still seen today (Jan, 2018), even in placement of supermarkets (Eisenhauser, 2001; Moreland et al., 2002).

Today, while the U.S. is more racially and ethnically diverse, residential segregation persists (Williams & Emamdjomeh, 2018). Bower and colleagues (2014) examined the effect of racial segregation, poverty and urbanicity on food access via US 2000 Census data. Their results indicated that neighborhoods mainly consisting of racial/ethnic minorities (e.g., African Americans and Latinx Americans) and characterized by higher rates of poverty had less access to supermarkets. Eisenhauser (2001) reviewed the phenomenon of "supermarket redlining," in which corporate grocers primarily invest in suburban areas due to their low-risk profitability. Inflexible urban infrastructure that placed stipulations on store development coupled with disinvestment in cities in the late 1980s perpetuated supermarket redlining. Because urban environments are characterized by racial/ethnic minorities, African Americans are disproportionately affected by these discriminatory practices both in wealth (Jan, 2018) and

health attainment (Eisenhauser, 2001). Thus, lack of access to fresh foods serves as one specific structural factor impacting healthy eating among African Americans.

Oversaturation of Unhealthy Foods. Not only do individuals living in an urban environment have limited access to grocery stores, they also experience an oversaturation of fast food restaurants and convenience stores (Black et al., 2004; Kwate et al., 2009). *Food swamps* is a term that describes the saturation of fast food restaurants and convenient stores (Rose et al., 2009), which generally sell high-fat, -sugar, -sodium, and -caloric foods (Sharkey et al., 2012) and do not offer many healthy options (Cerin et al., 2011). Food swamps tend to overshadow healthy alternatives (Cooksey-Stowes et al., 2017). Additionally, food swamps were found to be more predictive of county-level obesity rates than food deserts (Cooksey-Stowes et al., 2017).

Previous research has found that racial disparities exist in placement of fast food restaurants and convenient stores (Morland et al., 2002, 2014). For example, Hilmers et al. (2012) conducted a literature review examining accessibility of fast-food outlets and convenience stores and found that both fast-food chains and convenience stores were located primarily in racial/ethnic minority—particularly African American and Latinx—neighborhoods. Furthermore, a study assessing density of fast food restaurants in NYC found that density was highest in regions with the greatest population of African Americans regardless of income level. Among neighborhoods of equal median income, fast food restaurant density increased from 5% to 62% in predominately White vs. African American neighborhoods, respectively. These results suggest that race may play a major factor in placement of fast food restaurants and convenience stores, more so than SES (Kwate et al., 2009). Because frequency of consumption at fast food restaurants was positively associated with obesity among African Americans (Satia et al., 2004),

targeted placement of unhealthy foods in African American neighborhoods, in conjunction with limited access of grocery stores, may further underlie existing racial disparities in obesity.

Financial Access. Financial access is an equally critical structural factor contributing to healthy eating. Previous research on food pricing has shown that healthy foods are twice as expensive as unhealthy foods (Kern et al., 2018). Cost has been reported qualitatively (via interviews and focus groups) and quantitatively (via self-report measures) as a barrier to healthy eating (LaCaille et al., 2011; Sogari et al., 2018; White et al., 2017). For example, Kerschaw and colleagues (2019) conducted an experimental study where participants had to select a meal based on several attributes (e.g., taste, healthfulness, preparation, and price).While taste and healthfulness of meals were the main factors influencing decision-making across all SES groups (i.e., low, middle, and high), financial cost was a major determinant of meal choice among lower SES participants.

Financial access also covaries with race (Williams and Collins, 2001). Historical and current labor market discrimination has sustained racial wage gaps. For the same job, African Americans earn significantly less money than their white counterparts. In 2015, African American men earned 31.5% less earnings for an hourly wage than their white male counterparts, while African American women earned 20% less than their white female counterparts (Wilson & Rodgers, 2016). With that, African Americans are more likely to experience poverty on multiple dimensions (Reeves et al., 2016). With overall lower earnings, African Americans may experience greater financial strain. As a result, cost may be a major factor in food decision-making.

Consistent with these trends, African Americans have reported cost as a barrier to healthy eating (Richard Adams et al., 2019; Mincey et al., 2017; Swierad et al., 2017). Fulp, Mcmanus

and Johnson (2009) specifically tested the role of perceived financial cost in healthy eating among African Americans. First, researchers provided a health education and budgeting intervention to African American participants who received federal and/or state government assistance for a nutritional program. Following the intervention, participants were asked to indicate their intention to engage in healthy eating. The results showed that many participants recognized the importance of healthy eating but did not think they could afford a "nutritionally-adequate, culturally-familiar, and high-quality healthy diet" with the financial support they received.

Time

Lack of time is often reported as a significant barrier to healthy eating (Adams et al., 2019). Preparation of healthy foods is often considered time-consuming in comparison to preparation of unhealthy foods (Goldberg et al., 1999; Lucan et al., 2010). Competing responsibilities, such as family caretaking and work, often lead individuals to choose foods that require less preparation (Baruth et al., 2014). One major factor that is consistently associated with increased competing responsibilities is single-parenthood (APA, 2019). In a nationally representative sample of parents, among households with a single-mother or single-father, adolescents tended to have less healthy eating behaviors, compared to adolescents who lived in two-parent households (Stewart & Menning, 2009). Time constraints common in single-parent households also tend to result in lack of parental monitoring during meals (Stewart & Menning, 2009), which in turn can lead to more fast-food consumption or lack of balanced meals, or more processed foods in the home food environment.

Foods that require less preparation are often processed, containing empty calories, and high in salt, sugar, fat, and other preservatives (Poti et al., 2017). For example, Hall and

colleagues (2019) conducted a randomized clinical trial assessing type of diet (i.e., "ultra-processed" vs. unprocessed) on energy intake and other biological markers. Those who consumed an ultra-processed diet ate more meals and gained additional weight during the trial.

According to the Urban Institute, African Americans are more likely to have single-headed households (83%) compared to other racial groups. Richards Adams and colleagues (2018) found that most of calories consumed by African American study participants were empty calories, as opposed to nutrient-rich calories (e.g., fruit, vegetables, proteins, dairy, whole grains). Among these participants, lack of time to prepare healthy foods, over and above convenience and ease of access to unhealthy foods, was listed as a major barrier to engagement in healthy eating. Likewise, previous research utilizing interviews has concluded that time constraints in combination with convenience of unhealthy food options is a major barrier to consumption of fruits and vegetables among African Americans (Lucan et al., 2010).

In sum, racial disparities in access to structural factors that associated with healthy eating such as the built environment, financial access, and limited time tend to hinder engagement in healthy eating among African Americans. In the following section, major psychological factors contributing to engagement in healthy eating are reviewed.

Psychological Factors Associated with Healthy Eating

Psychological factors likely interact with the structural factors (e.g., built environment, financial access, and time) to yield significant barriers to engagement in healthy eating among African Americans. While these factors covary by race, the mechanisms through which the factors contribute to (un)healthy eating are the same across individuals from different racial/ethnic backgrounds.

Stress

Experience of stressors has been associated with poor food choice (Pascoe & Smart Richman, 2010; Ng & Jeffrey, 2003). Chronic stress has been associated with anxiety. High fat comfort foods have been found to suppress the release of cortisol, decreasing anxiety (Dallman, 2003). Thus, unhealthy habits (including unhealthy eating) help to mitigate stress by suppressing physiological stress response. Stress can also induce other negative emotions, such as anger and helplessness (Lazarus, 2003; Zautra, 2003). To mitigate these emotions, individuals tend to engage in high-pleasure seeking behaviors including over-eating or consumption of high-fat, high-sugar foods (Bennett, Wolin, Robinson, Fowler, & Edwards, 2005; Jackson, Knight, & Rafferty, 2010). Indeed, health-compromising behaviors, such as over-eating, are common following exposure to stressors (Adam & Epel, 2007; Dallman, 2009). Stress can lead to ego-depletion, a psychological state where individuals lack sufficient cognitive resources to self-regulate (Baumeister et al., 1998; Baumeister & Vohs, 2007). An individual's capacity to resist temptation and impulses diminishes when individuals experience ego-depletion (Baumeister, 2002). Consequently, health-compromising behaviors, including consumption of poor diet, may be especially present in individuals who are depleted cognitively. Supporting the role of stress in eating behaviors, Pascoe and Smart Richman (2011) found that the experience of interpersonal discrimination was associated with unhealthy food choices. Specifically, in the first experiment, participants who were asked to recount an experience of racial discrimination reported greater preference for unhealthy foods on a food decision task. This effect was replicated with a behavioral food decision task (i.e., choosing to eat a granola bar vs. a candy bar) in the second experiment. In this experiment, research assistants (RA) evaluated the "creativity" of the participant on a laboratory task. Participants in the discrimination condition were told that the RA rated men higher because they are more creative than women. Individuals in the

experimental condition were more likely to select the unhealthy food option (i.e., candy bar), at the conclusion of the lab visit.

African Americans encounter stress and challenges regularly as a result of not only structural discrimination (e.g., lower SES, residential segregation, harsher work environment) but also interpersonal discrimination (Brody et al., 2014; Smart Richman & Jonassaint, 2008). Sternthal, Slopen, and Williams (2011) examined associations between stress across different domains (i.e., acute, early life, financial, relationship, life and job discrimination, community, and employment) and health outcomes among a sample of African, Latinx, and White Americans. African Americans reported the greatest burden of stress. Furthermore, Jackson and colleagues (2010) found that African Americans often employ unhealthy behaviors (i.e., unhealthy eating, smoking, drinking alcohol) as coping mechanisms in chronically stressful environments. Indeed, Stepanikova et al. (2017) has shown that perceived discrimination and perceived stress served as two risk factors for increased weight gain among African Americans. These findings suggest that exposure to stress both in general and specifically stemming from discrimination may partially account for racial disparities in obesity, due to health-compromising coping mechanisms (i.e. unhealthy eating).

Social Support

For individuals who have been eating unhealthy foods, engagement in healthy eating requires behavioral changes. Research has consistently shown that social support plays a critical role in any successful behavior change (Fraiser & Spink, 2002; Wilson & Ampey-Thornhill, 2001). This is because social support not only boosts self-efficacy (i.e., an individual's confidence to engage in certain behaviors or accomplish certain tasks; Bandura, 1977; Bandura, 2004) but also provides accountability (Barnett & Praetorious, 2015; Taylor, 2011). Studies have

found that social support from friends and family is an important psychosocial predictor of fruit and vegetable consumption, such that low social support is associated with a decrease in fruit and vegetable consumption (Shaikh et al., 2008; Sogari et al., 2018). Moreover, lack of social support from family members is a major barrier of healthy eating (Barnett & Praetorious, 2015; Crookes et al., 2016; James, 2004).

Research provides evidence that African Americans receive less social support for engagement in healthy eating (Anderson Steeves et al., 2016; Johnson et al., 2014) as compared to White Americans due to multiple culturally-unique factors as discussed in the next section (Henderson, 2007; Overstreet et al., 2010). For instance, focus groups among African Americans exploring factors that influence food choices identified family and friends as being unsupportive of dietary change (James, 2004). Additionally, Barnett and Praetorious (2015) conducted a qualitative interpretive meta-synthesis of data from African American women regarding their beliefs about healthy eating. In this study, African Americans reported opposition from family members in the form of questioning engagement in healthy eating.

The next section discusses how culturally-relevant factors contribute to the amount of social support African Americans may receive for engagement in healthy eating. These same factors also play a critical role in directly informing an individual's (un)willingness to engage in healthy eating. In other words, culturally-relevant factors both indirectly and directly impact healthy eating among African Americans.

Culturally Specific Factors among African Americans

Culture, a collective consciousness amongst a group, is foundational to health behaviors (Airhinhenbuwa, 1990). In previous research, culture has not been studied extensively as an

underlying mechanism driving health behaviors, but rather as a barrier to behavior change (Airhinhenbuwa and Liburd, 2006). To address this research gap, Airhinhenbuwa (1990) developed the PEN3 Model, a conceptual framework that centralizes culture as a key element of behavior change.

The PEN3 Model has three dimensions aimed to optimize interventions; cultural identity, relationships and expectations, and cultural empowerment. Cultural identity is the first dimension of the model, which has three focal points that aims to empower individuals (*P-person)*, families (*E-extended family)*, and communities (*N- neighborhood)*.

The second dimension of the model, relationships and expectations, aims to identify behaviors that are most important and most susceptible to change. The model encourages researchers to examine perceptions and factors that enable or nurture an individual to engage in a certain behavior. Specifically, perceptions (*P-perceptions)* include knowledge, attitudes, and values that may promote or impede personal motivation to change. Structural factors that affect motivation to change are considered enabling (*E-enabling)* factors. Lastly, any feedback from family members, personnel, peers, etc., which influence engagement in behavior are considered nurturing factors (*N- nurturing).*

The final dimension of the model, cultural appropriateness of health behavior, is critical to behavior change and sustainability. It also includes three focal points: (a) beneficial (*P-positive*) health behaviors which should be bolstered; (b) unfamiliar practices which have no health bearing but are culturally relevant (*E- existential)*; and (c) health-compromising behaviors (*N-negative)* which should be modified. This model has been applied to several studies and interventions among African Americans for an array of health outcomes, including human immunodeficiency virus (HIV), cancer, and hypertension (Iwelunmor, Newsome, and

Airhinhenbuwa, 2014). Although limited in number, some studies have used the PEN3 Model and identified culturally-relevant factors unique to African Americans that may contribute to engagement in healthy eating.

Cultural Norms and Racial Identity

The preparation, composition, and consumption of African American cuisine has deep historical roots in enslavement. "Soul Food" is a traditional cuisine of African Americans with cultural influences from all parts of Africa (Henderson, 2007). Both preparation and consumption of Soul Food edify the black community (James, 2004), thus providing a sense of connectedness to one's culture and allowing the expression of one's cultural identity (Henderson, 2007; Liburd, 2003; Swierad et al., 2017). A traditional meal often consists of chitterlings (a.k.a. 'chitlins'), fried chicken, collard greens, okra, etc. Because of the various cooking methods (e.g., frying in lard) and seasonings (e.g., seasoning with pork fat) used to transform undesirable meats into more palatable meals (Swierad et al., 2017), Soul Food tends to use large amounts of salt and fat, which overtime can increase one's risk of obesity and other related illnesses.

Preference for culturally-significant foods serves as one barrier to healthy eating among African Americans. In a qualitative study conducted among African American adults, participants stated that preference for Soul Food served as the most prominent health-compromising behavior in the African American community (Swierad et al., 2017). Diet and food preferences are often transmitted through generations, with parents playing a pivotal role in their children's diet (Jakub et al., 2018). There is some evidence that engagement in a healthy diet is often seen as culturally discordant among African Americans (Liburd, 2003). Family gatherings tend to center around food, often serving traditional cuisine to African American culture (e.g., black-eyed peas; James, 2004; Liburd, 2003). Furthermore, in a cross-sectional

study of psychosocial barriers to healthy eating among African Americans, Adams and colleagues (2019) found that participants had lower self-efficacy to eat healthy at family functions. Finally, among African Americans, it can be culturally unacceptable for an individual to deny food offered to them, because it is seen as disrespectful to the food preparer. Thus, denial of food (although it may be unhealthy) might be perceived as offensive. Taken together, these studies demonstrate that resistance or difficulty in changing culturally engrained diet serves as a unique barrier to engagement in a healthy diet in African Americans (Swierad et al., 2017).

In the same study, Swierad and colleagues (2017) found that Black participants possessed an overall aversion to contents and products of mainstream culture (i.e., healthy diet) as a result of experiences of discrimination and cultural mistrust associated with mainstream culture (i.e., White American culture). Such aversion to mainstream culture may promote and exacerbate adherence to African American cultural cuisine (Swierad et al., 2017). In fact, using focus groups, Oyserman and colleagues (2007) found that African Americans perceived healthy eating as something done by middle-class White Americans, rather than a behavior characteristic of African Americans (Oyserman, Fryberg, & Yoder, 2007). According to identity-based motivation theory, individuals are motivated to act in ways that are congruent with their identity (Oyserman, 2015). Consistent with this theory, African Americans were less likely to eat healthy foods when their racial identity was made salient through priming, despite the fact that they were fully aware of health benefits of healthy eating (Oyserman et al., 2007). While a strong racial identity has many positive psychological and developmental benefits (Chavous, 2000; Wakefield & Hudley, 2009), it may serve as one psychological barrier to healthy eating for African Americans. Additionally, cultural norms pertaining to food in conjunction with the collective

identity forged from adherence to cultural norms may underlie lack of social support for healthy eating in African Americans.

Body Preference

As previously mentioned, experiences of discrimination and cultural mistrust have facilitated an aversion to White mainstream culture among African Americans (Swierad et al., 2017). The same phenomenon can be observed in body preferences and standards of beauty, such that African Americans hold different beauty standards for women in comparison to White Americans (Rucker & Cash, 1992; Overstreet et al., 2010). Specifically, contrary to mainstream culture that values thinness, African Americans hold thicker body frames to a higher regard than thinner ones (Dorsey et al., 2010; Kelch-Oliver & Ancis, 2011; Renzaho et al., 2011). Curvaceous hips and a plump posterior are also valued to a greater extent among Black women in comparison to white women (Overstreet et al., 2010). In fact, Black women have reported receiving more attention from men when they had a thicker body frame in comparison to a more a slender one (Blixen et al., 2006). In a cross-sectional study aimed to assess body ideals amongst Black and White female college students, Black students reported more positive thoughts regarding their bodies, and were less fearful of weight gain, in comparison to white female students. On the other hand, White women were more preoccupied with weight gain and more conscious of their diet (Rucker & Cash, 1992). Among African American women, as a means to resist societal body stigmatization, a positive self-valuation is engendered, which encompasses and celebrates all body sizes (Lovejoy, 2001). When thicker body frames are highly valued, there may be a higher propensity towards having obesity and less motivation to consume a healthy diet (Renzaho et al., 2011).

In addition to body preference, research has also shown that there is cultural difference between White and Black Americans in perceptions of weight status (i.e., personal evaluation of weight as underweight, normal, overweight, or obese). Dorsey and colleagues (2010) investigated the association between weight perception and weight management behaviors (e.g., attempts to lose weight) amongst Black, Mexican and White adults. They found that both Black men and women were more likely to have an incongruent weight perception than other participants, such that they perceived themselves as being of normal weight, when in actuality they were medically classified as having overweight or obesity. Amongst participants with an incongruent weight perception, Black men and women also reported less desire to lose weight. Furthermore, weight misperception in Black women was associated with less weight management behaviors. It should be noted that additional qualitative work has found that for some African American women, weight classifications based on BMI reflects a White norm and ideal of beauty and does not cross cultural boundaries (Cameron et al., 2018).

Research Gaps

Lack of Focus on Facilitators of Healthy Eating

Culture, a collective consciousness amongst a group, is foundational to health behaviors (Airhinhenbuwa, 1990). In previous research, culture has not been studied as an underlying mechanism driving health behaviors, but rather as a barrier to behavior change (Airhinhenbuwa and Liburd, 2006). The current study will use the second dimension of the PEN3 model (i.e., relationships and expectations) as a framework to assess culturally relevant factors that promote healthy eating among African American college students through the use of mixed methods design.

Importance of Healthy Eating among College Students

In 2017, the National Center for Education Statistics reported that 10.8 million undergraduate students were enrolled at a 4-year institution (2019). Enrollment is projected to increase by two percent by 2028, making undergraduate enrollment at a 4-year institution 11.1 million. College presents a critical period for personal development in regards to formation and solidification of health behaviors, identity development, as well as intellectual and professional growth (Laska et al., 2010; Samuolis et al., 2001; Stringer & Kerpelman, 2010). This unique transition period is characterized by changes in the physical environment and increased psychological stressors from a myriad of sources, which may facilitate weight gain amongst college students (Darden, 2014; Nelson et al., 2007; Wengreen et al., 2009). Changing one's physical setting, an increased academic load, as well as potentially unpleasant interactions with staff and faculty may induce psychological stress, increasing their susceptibility to weight gain through poor food choices and sedentary behaviors. In addition, college students experience increased autonomy and responsibility regarding their food choices (Laska et al., 2010).

Interestingly, college students experience weight gain at a faster rate than their non-college counterparts. In 2018, a mere 4.3% of college students reported consuming the recommended five servings of fruits and vegetables in a day, according to the National College Health Assessment (NCHA) conducted by the American College Health Association. In this same sample, 23.4% of students had overweight and 12.1% had obesity.

There are both gender and racial differences in obesity prevalence amongst college students. In a study that assessed the prevalence of obesity at a Historically Black University (HBCU), researchers also found that nearly half of the sample (47.5%) were classified as having overweight or obesity, higher than a representative sample including African American college students (Nelson et al., 2007) and higher than the national average for American college students

captured in the 2011 NCHA (Sa et al., 2016). In another study, Nelson and colleagues (2007) examined the increasing prevalence in obesity rates amongst college students by race and gender using a cross-sectional design. In this study, men reported the most weight gain throughout college in comparison to their female counterparts. Racial disparities in obesity prevalence at the population level were also documented in the same study. Specifically, African American men reported the greatest weight gain during college. Nelson and colleagues (2007) further reported that television viewing is one important contributing factor to weight gain amongst college students, with African Americans students reporting the greatest amount of television viewing. This may further contribute to racial disparities in obesity as television viewing increases exposure to advertisements of more calorie-dense foods.

Previous research has found that college students may experience some of the same barriers as adults in college environments, such as affordability, acceptability, accessibility, and adequacy of food choices (Dhillion et al., 2019). However, this research was conducted amongst a population consisting mainly of Latinx and Asian/Pacific Islander students. It is imperative that research examines factors specific to college students which contribute to healthy eating. College is a critical place for the development of either health-promoting or health-compromising behaviors; thus, is it a crucial period for interventions (Nelson et al., 2007).

Overview of the Present Research

The overarching goal of the current research was to address clear gaps in the previous literature 1) limited focus on specific factors related to healthy eating unique African American college students and 2) limited attention to the role of culture in healthy eating behaviors among African American college students. Thus the current study sought to accomplish two aims By examining culturally-relevant factors that promote healthy eating, theoretical and clinical

understanding of food-related decision-making among African Americans can be advanced. Further, research with a cultural lens has the potential to diversify future points of intervention for healthy eating. Drawing on the PEN3 Model, the present research was designed to identify: 1) factors that promote healthy eating among African American college students through the administration of an existing measure; and 2) culturally-relevant experiences and factors that promote healthy-eating among African American college students whom currently eat healthy. The present study employed a convergent mixed methods design. In Study 1, factors that promote healthy eating were quantitatively assessed using a self-report measure. In Study 2, culturally-specific factors which promote healthy eating were qualitatively assessed via interviews. Convergent mixed methods are useful to assess a given question from multiple angles (Creswell, 2014). This design permitted the exploration of the generalizability of factors (i.e., common and non-culture specific) identified in prior research to African American college students as well as exploration and identification of culturally-specific factors that promote healthy eating among African American college students. Because this investigation present studies was exploratory, there were no a priori hypotheses proposed.

Study 1 Methods

Study 1 aimed to test the generalizability of factors previously identified to shape healthy eating among adults in general to a sample of African American college students.

Participants

Inclusion criteria were: 1) age 18 or older, 2) self-identified as African American, and 3) currently enrolled in a college/university or a recent 2020 graduate. A power analysis was

performed using G Power* 3 to estimate a priori sample size. Specifically, an estimated medium effect size of Cohen's f = .15 was used to determine the sample-size needed to conduct a linear multiple regression, with eight predictors (i.e., motivators for breakfast, motivators for foods and snack, barriers for breakfast, barriers for healthy foods and snack, importance of healthy eating, beliefs of typicality of healthy eating, and racial centrality). The effect size was determined based on findings from a previous study that has demonstrated at least medium to large effect size for associations between motivators/barriers and healthy eating (Tucker et al., 2011). With 80% power (1- β), a sample size of 98 participants was needed in order to detect the hypothesized medium-sized effects on engagement in healthy eating.

A total of 70 participants (85.7% women; *M*age = 20.21 years, *SD* = 8.33; 40% senior-level classification) were recruited either via an online participant pool (SONA), run by the VCU Psychology Department, or through several media platforms including Facebook, Twitter, Instagram, and VCU TelegRAM. Of the 70 participants, 63 were undergraduate students who are enrolled at a college/university, three were recent students who graduated from a college/university in 2020, and three were graduate students. In addition, 90% of the participants classified as African American, with an African American ethnic background (74.3%).

Six participants (8.6%) who did not fall in the age range of emerging adulthood (18-25) (Arnett, 2000) were excluded from analysis. These individuals were either non-traditional students with families or graduate students. Additionally, there were 10 participants who only partially completed the study. Missing data was addressed using listwise deletion. Those participants were still included in the main analysis. This resulted in 53 analyzable cases. The average age of eligible participants was 20.23 (*SD* = 8.33) years, and a majority identified as

women (87.3%), classified as a senior (36.5%), and identified as solely African American (90.5%). Ethnically, a majority of participants identified as African American (73.0%).

Procedure

Interested students read the information sheet posted online and self-enrolled in the study. Participants completed a screening questionnaire that was designed to ensure all inclusion criteria (i.e., age, race, and college student status) were fulfilled. Individuals who did not meet eligibility criteria were prompted to the "end of the study page." Participants who completed the study via SONA received .25 research credits for completing the screening survey. Eligible SONA participants were provided a password to gain access to the main survey. For participants who were recruited via social media, only those who met the eligibility criteria proceeded to the main survey. Individuals who did not meet the eligibility criteria were prompted to the "end of study page" and were not entered into the e-gift card raffle. The main survey was administered on Qualtrics. Participants reported demographics first and then completed an assessment battery including self-report measures of motivators and barriers to healthy eating, importance of healthy eating to the individual, daily engagement in the behavior, and racial identity. Participants who enrolled via SONA received .75 partial research credit for fulfillment of course requirement in exchange for completion of the study. Participants who were recruited via social media were entered into a raffle to receive one of three Amazon $ 15 e-gift cards.

Measures

Demographics

Participants reported demographic information regarding age, race (select all that apply), ethnicity (select all that apply), gender, previous and current use of governmental assistance for food (i.e., food security; yes/no), classification (freshman, sophomore, etc)., meal plan status

(yes/no), current collegiate institution, and self-reported height (in.) and weight (lb.). Participants also indicated their residential arrangement (on campus, off campus alone/with roommates, and off campus with parents). Further, participants who completed the survey during the COVID-19 pandemic provided information regarding their residency type twice, to indicate their living arrangement prior to the pandemic and during the pandemic. Self-reported height and weight were used to compute BMI based on the formula proposed by the CDC [weight (lb.)/ height (in.)]^2 X 703 (CDC, 2020). These items were included as covariates during analyses.

Figure Rating Scale

Participants indicated the image that best corresponded with their current body size on the Figural Stimuli Rating Scale (Stunkard, Sorensen, and Schulsinger, 1983). This measure has been found to be complimentary to measures of BMI and yield insight into body perception (Bays et al., 2009). Participants selected the gender-specific silhouette that best corresponded with their current body size on a scale ranging from 1 (the thinnest body type) to 9 (largest body type). See Figure 1.

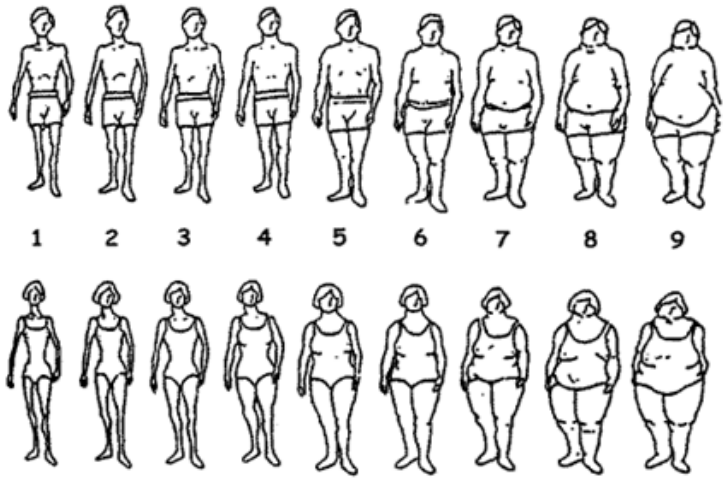

Figure 1. *The Figural Rating Stimuli Scale*

Motivators and Barriers to Healthy Eating.

Both motivators and barriers to healthy eating were assessed with the Motivators and Barriers of Health-Smart Behaviors Inventory (MB-HSBI; Tucker et al., 2011). The MB-HBSI is a 127-item inventory designed to assess the degree to which individuals face motivators and barriers to "health-smart" behaviors (i.e., healthy breakfast consumption, healthy food and snack consumption, healthy beverage consumption, and physical activity). This measure has been validated in African American, Latinx American, Asian American and White American adults (Tucker et al., 2011). Internal reliability in a sample of African American adults was adequate (α = .70; Nolan et al., 2016).

The inventory is comprised of 28 subscales (e.g., routine, health benefits, and negative attitudes, etc.). Given the present study's focus on healthy eating, only used 14 subscales. The Healthy Breakfast—motivators scale (α = .78) contains three subscales: *desire to be healthy* ("I think you have to eat breakfast if you want to be healthy"; α = .78), *availability* ("If I want healthy foods, I can get them" ; α = .45), and *family influences* ("Growing up, my parent told me about the importance of eating a healthy breakfast "; α = .58). The Healthy Breakfast—barriers subscale (α = .58) contains two subscales: *Culture/Familial ties* ("My culture's traditional breakfast foods are not very healthy"; α = .45) and *low priority* ("I would rather sleep late and skip breakfast"; α = .70).

The Healthy Foods and Snacks- Motivators scale (α = .73) contains five subscales that evaluate *routine* ("I have a personal goal of eating healthier snacks"; α = .66), *availability* ("Fruits and vegetables can easily be eaten without being cooked "; α = .59), *health benefits* ("I think about what could happen if I eat too many unhealthy foods"; α = .60), *medical issues* ("I am concerned about preventing diabetes "; α = .64), and *convenience* ("I can find healthy snacks that come in handy, in small packages "; α = .45). Finally, the Healthy Foods and Snacks—

barriers scale (α = .80) contains three subscales: *negative attitudes* ("I just don't care about eating fruits and vegetables every day"; α = .76), *availability* ("Fresh healthy foods are not easily available"; α = .61), and *self-control* ("I get cravings for unhealthy foods "; α = .61).

Participants indicated the extent to which they agree/disagree with each of the statements on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). Higher scores indicated greater presence of that specific motivator or barrier.

Perceived Importance of Health Behaviors

The degree to which participants perceived healthy eating and physical activity as personally important was assessed with the Health Behaviors Importance Rating Form (HBIRF; Nolan et al., 2016). The scale has been validated in a sample of African American adults (Nolan et al., 2016). Given the exclusive focus on healthy eating in the present study, only the six items regarding the importance of healthy eating were used. Example items included: "How important is it to you to eat a healthy breakfast each day?" or "How important is it to you to eat vegetables each day?" Respondents reported their perception using an 8-point Likert scale ranging from 0 (not important at all) to 7 (extremely important). Higher scores indicated greater importance of healthy eating to the individual. In the current sample, the measure yielded good reliability (α = .85).

Engagement in Healthy Eating

The degree to which participants engaged in specific healthy eating behaviors on a daily basis was assessed with the 10-item Health-Promoting Behavior Log (HPBL; Nolan et al., 2016). The scale has been validated in a sample of African American adults (Nolan et al., 2016). Given that the present study focuses on healthy eating, only the seven items relevant to healthy eating behaviors were used. Example items included: "On how many days of the week did you eat 2-3

servings of fruit?" and "On how many days of the week did you eat healthy foods and snacks that are low in calories, fat, and sodium instead of foods and snacks that are high in calories, fat, and sodium?" Respondents indicated the number of days per week, on average, they engage in the specified behavior, using an 8-point Likert scale ranging from 0 (no days) to 7 (all 7 days of the week). The internal consistency in the current sample was .80.

Racial Identity

Racial centrality was assessed with the centrality subscale of the Multidimensional Inventory of Black Identity (Sellers et al., 1997). This subscale measures the degree to which being African American is a central part of the individual's identity. The eight-item subscale has been found to associated with less interracial interaction ($r = .39$, $p < .01$). Participants were asked to report their agreement with each of the statements on a 7-point Likert scale, ranging from 1(strongly disagree) to 7(strongly agree). Example items included, "Overall, being Black has very little to do with how I feel about myself" (reverse-coded) and "My destiny is tied to the destiny of other Black people." In previous studies, the racial centrality subscale yielded high internal reliability ($\alpha = .77$) Higher scores indicated greater racial centrality ($\alpha = .69$).

Healthy Eating as an In-group Defining Behavior

The extent to which participants viewed health behaviors as in-group defining was assessed with a measure that was developed based on prior research on identity-based motivation (Oyserman et al., 2007). Specifically, after completing the HPBL, which assessed frequency of engagement in healthy eating behaviors, participants reported the extent to which they believe the aforementioned behaviors (from the HPBL) are representative (typical) of White middle-class Americans ($\alpha = .80$), White lower-class Americans ($\alpha = .93$), Black middle-class Americans ($\alpha = .81$), and Black lower-class Americans ($\alpha = .79$). Reponses were indicated on a

5-point Likert scale ranging from 1 (very atypical) to 5 (very typical). Due to small sample size, perceptions of healthy eating as in group defining were averaged across SES, yielding two variables with good reliability (i.e., healthy eating as ingroup defining for White Americans [α = .83] and Black Americans [α = .81]). Higher scores indicated that the given behavior was more typical of the respective group.

Study 1 Data Analysis

Data were first screened for missingness. A non-significant Little MCAR's test, indicated that the data were missing completely at random (χ^2 (17) = 13.81; p = .68). Assumptions of univariate and multivariate normality, linearity, and normality of error were checked and met.

In previous literature using the Motivators and Barriers to Health-Smart Behaviors Inventory (MB-HSBI), researchers generated a total score for each subscale (e.g., routine, availability) and a total score for each latent construct (e.g., Motivators of healthy breakfast, Barriers to healthy foods and snacks). Due to the low reliability of several of the subscales in the current sample, composite scores for each of the motivator latent constructs (i.e., healthy breakfast and healthy foods and snack) and barrier constructs (i.e., healthy breakfast and healthy food and snack) were computed. This yielded good reliability for both scales (motivators; α = .83; barriers; α = .84). Furthermore, gender was dummy-coded as the sample was predominately female (87.3%), with 11.1% identifying as male, and 1.6% identifying as transgender. The researcher chose to dummy-code male and transgender as the "non-female" group, as there were not sufficient cases to denote a single variable to either male or transgender participants. Additionally, residential arrangements (i.e., living off campus, living with parents) were dummy-coded with living on campus as the reference group. Race and ethnicity were dummy-coded (i.e.,

monoracial or biracial; African American or other) with African American as the reference group.

A first-order bivariate correlation was conducted among all demographic, predictor, moderator and outcome variables, in order to determine potential covariates. To assess the most relevant factors associated with healthy eating among African American college students, a hierarchical linear regression was conducted. Motivators, barriers, and importance of healthy eating were regressed on to engagement in healthy eating. In Step 2, barriers subscale (i.e., for breakfast and lunch) and were entered in to the analysis, Step 3 included motivators (i.e. for breakfast and lunch), and Step4 assessed importance of healthy eating over and above motivators and barriers to healthy eating. Demographic variables correlated with either the predictor, moderator, or outcome variables were entered into the model as covariates (Step 1).

To explore whether racial centrality would moderate the association between motivators and perceived importance as well as barriers and importance, separate regressions were conducted. Hayes' (2018) PROCESS macro Model 1 was used to generate 5,000 bootstrapped confidence intervals of the conditional effect. Specifically, in the first analysis, racial centrality was assessed as a potential moderator of the association between motivators and perceived importance, and in the second analysis, racial centrality was assessed as a potential moderator of the association between barriers and perceived importance. Another set of moderation analyses was also conducted to examine whether healthy eating as an ingroup defining behavior would moderate the associations between motivators and perceived importance and between barriers and importance. Because there were two indices of health promotion as an ingroup defining behaviors (one for White Americans, another for Black Americans). Hayes PROCESS Model 2 was used. All statistical processes were conducted on IBM SPSS Statistics 26.

Study 1 Results

Demographics

The average age of eligible participants was 20.23 (*SD* = 8.33) years, with a majority identifying as women (87.3%), classified as a senior (36.5%), and identified as solely African American (90.5%). Ethnically, a majority of participants identified as African American (73.0%).

Prior to the onset of the COVID-19 pandemic and the stay-at-home sanctions, 58% of participants lived on campus; 19% lived off campus either alone or with roommates, and 22% lived with parents off campus overall. Fifty-four participants completed the survey during the COVID-19 and thus provided information about their residential arrangement twice---prior to and during the pandemic. The distribution of residential arrangement prior to the onset of the pandemic among the subset of participants was similar to that of overall participants above. Specifically, 52.4% of participants lived on campus; 15.9% lived off campus either alone or with roommates, and 20.4% lived with parents off campus. However, the distribution has shifted drastically during the pandemic, such that 3.2% of participants lived on campus, 17.5% lived off campus either alone or with roommates, and 74.1% lived with parents off campus.

Finally, a majority of the sample experienced food security in childhood (63.5%) and are currently experiencing food security as an adult (69.8%). Over half of the participants (57.1%) did not have a meal plan through their institution, and the sample predominately had overweight (BMI; *Mage* = 26.50 years, *SD* = 5.71). On average, the sample reported consuming a healthy diet on 3.6 days per week. Table 1 summarizes participant characteristics.

Descriptive Statistics

Overall, the participants reported a moderate presence of motivators (M = 2.86, SD = 1.51) and barriers (M = 2.42, SD = .40) for engaging in healthy eating, and healthy eating was deemed as somewhat important personally to this sample (M = 4.29, SD = 1.59). In addition, healthy eating was perceived as somewhat typical of White Americans (M = 3.36, SD =.68) and somewhat atypical of Black Americans (M =2.65, SD =.61). Lastly, this sample reported a strong racial centrality (M= 5.96, SD=.79; See Table 2). .

Table 3 presents bivariate correlations among study variables. A Pearson correlation revealed that ratings on the figural scale were positively associated with barriers to engagement in healthy eating, such that participants who reported perceptions of a larger body size, reported a greater presence of barriers (r = .31, p = .02). A point-biserial correlation also revealed that living off campus with one's parents was also associated with less motivators to eat healthy (r_{pp} = -.26, p < .05). Collectively, ratings on the figural scale and residential arrangement were significantly associated with either a predictor or an outcome or both, and thus they were included in the main analyses below as covariates.

Next, an examination of correlations among study variables suggested that personal importance of engagement in healthy eating was positively associated with motivators to engage in healthy eating (r=.67, p<.001), negatively associated with barriers to engagement (r=-.53, p < .00), and positively associated with overall engagement at one time point (r=.62, p < .00). There was a moderate positive association between motivators and engagement in healthy eating (r=.47, p= .00) and a strong negative association between barriers and engagement in healthy eating at one time point (r=-.71, p= .00).

Factors Associated with Engagement in Healthy Eating

A hierarchical linear regression was computed, then applied with figural scale and dummy-coded residential arrangement were entered into the model as covariates. In Step 1, neither covariates were related to actual engagement in healthy eating, $F(3,49) = .70$; $MSE = 1.5$, $R^2 = .04$, $p = .55$. In Step 2, barriers were significantly associated with engagement in healthy eating [ΔF (1,48) =44.86, $MSE = 1.1$, ΔR^2=.46, $p < .00$], explaining nearly an additional 50% of the variance in engagement in healthy eating. Specifically, individuals who reported greater barriers to healthy eating were significantly less likely to have engaged in healthy eating than those who reported fewer barriers to healthy eating ($\beta = -.67$, $SE = .52$, $p < .001$). In contrast, inclusion of motivators in Step 3 did not result in a significant increase in the variance in engagement in healthy eating, ΔF (1,47) =.17, $MSE = 1.11$, ΔR^2=.002, p=.68. However, when importance was entered into the model in Step 4, it explained an additional 9.4% of the variance in engagement in healthy eating, ΔF (1,46) =10.82, $MSE = 1.01$, ΔR^2=.094, $p < .001$. These results suggest that viewing healthy eating as personally important is associated with more engagement in healthy eating over and above barriers to engagement in healthy eating ($\beta = .43$, $SE = .12$, p =.002). Table 4 provides regression coefficients from the final model.

A post-hoc analysis was conducted to explore which specific barriers were associated with less healthy eating among African American college students. A multiple regression was computed with all individual barriers entered into the model simultaneously (Table 5). The overall model was significant, $F(5,53) = 12.03$, MSE =1.04, R^2=.532, $p < .001$. An examination of regression coefficients revealed that low priority ($\beta = -.33$, $SE = .26$, p =.01) and negative attitudes (β=-.43, $SE = .34$, $p < .001$) were associated with less engagement in healthy eating. Cultural/family influences, availability, nor self-control was significant predictors of engagement in healthy eating.

The Potential Moderating Effects of the Link between Motivators/Barriers and Importance

Lastly, moderation analyses were conducted to assess moderating effects of racial centrality on the association between motivators and importance as well as barriers and importance. There was no evidence that racial centrality moderates the association between motivators and importance to engage in in healthy eating (β = -.11, p = .879, *95% CI* [-1.56, 1.33]) or between barriers and importance (β = .33, p = .67, *95% CI* [-1.24, 1.91] in the current sample of African American college students.

Turning to health promotion as defining of White or Black Americans as moderators, results indicated that the relationship between motivators and importance was not significantly moderated by the perceptions of healthy eating as being defining of White Americans (β = .76, p = .33, *95% CI* [-.80, 2.34]) or Black Americans (β =-.51, p = .64, *95% CI* [-2.68, 1.66]). Similarly, the association between barriers and perceived importance was moderated by neither health promotion as defining of White Americans (β = -1.44, p = .06, *95% CI* [-2.96, .07]) nor defining of Black Americans (β = -.49, p = .61, *95% CI* [-2.44, 1.66]). Taken together, these results suggest that racial centrality and perceptions of healthy eating as in-group defining for White and Black Americans do not moderate the relationships between one's motivators/barriers to engagement in healthy eating and one's overall perceived importance of the behavior in the current sample of African American college students.

Study 1 Discussion

The main finding of study 1 was that increased barriers were associated with less likelihood of engagement in healthy eating in the current study. Further, post-hoc analyses in the present study suggests that low priority and negative attitudes regarding healthy eating, both of which represent personal attitudes, were associated with less engagement in healthy eating.

These results are consistent with findings from prior research. For example, in a cross-sectional study conducted amongst African American emerging adults (ages 18-25), Horton and colleagues (2009) found that perceived barriers explained a significant portion of the variance in dietary fat intake, such that increased barriers were associated with more dietary fat intake. The present study extended this previous research by further examining which specific barriers actually predicted engagement in healthy eating.

Low priority and negative attitudes were significantly associated with less importance and engagement in healthy eating. Individual's attitudes are strong predictors of individual's intention to engage in healthy eating (Blanchard et al., 2009; Conner et al., 2002). For example, Blanchard et al. (2009) found that attitudes toward healthy eating (enjoyable vs. unenjoyable) were more associated with intention to increase fruit and vegetable consumption than beliefs about healthy eating (beneficial vs. harmful) in predominately African American (47.2%) sample of college students. Compared to White students, African American students held more affective attitudes towards healthy eating, than instrumental attitudes, such that in determining their intention to engage in healthy eating, African American students were focused more on whether or not healthy eating was enjoyable rather than beneficial. The current study extended these findings and also demonstrated that negative attitudes are associated with less engagement in healthy eating among African American college students. In fact, previous research suggests that enjoyment of food is an important factor in food-decision making for African Americans (Antin & Hunt, 2012). The present results, along with findings from prior research, suggest that the desire to experience enjoyment may be one critical factor contributing to less engagement in healthy eating for African American college students.

Interestingly, cultural/familial ties, availability, and self-control were not significantly associated with healthy eating. This is contrary to previous literature on healthy eating among college students that suggests lack of availability of fresh food options and peer influences are significant barriers to healthy eating (LaCaille et al., 2011; Sogari et al., 2018). One potential reason for the present null findings is that food choice is a multi-faceted construct (Antin & Hunt, 2012). For this sample of college students, other factors may have taken precedence over availability of fresh foods, such as cost – which was not measured as a barrier to healthy eating (in the MB-HSBI), and has been noted as a critical barrier in previous research among college students, and African Americans in general (Sogari et al.,2018, Swierad et al., 2017). Also, influence from peers was not a construct measured in the MB-HSBI barrier subscales. This construct was also not assessed in the current study and should be an area of future exploration. Another potential reason for the null findings might be participant age. Nolan et al. (2016) explored motivators and barriers to healthy eating among working class African American adults, and concluded that routine and self-control were correlates of healthy eating. For working African American adults, these constructs might be important for predicting healthy eating because job demands place more structured time constraints on the schedule of working adults (Brauner et al., 2019), in comparison to college students who have high demands (LaCaille et al., 2011), but less structured time. Furthermore, college students are developing time management strategies to achieve personal, academic, and vocational goals (Thibodeaux et al., 2016), thus college students may still be learning how to develop and adhere to routines.

The present study also demonstrated that personal importance of healthy eating was associated with engagement in healthy eating over and above barriers to engagement in healthy eating. This is consistent with findings from a previous study of African American adults (ages

18-70), which found that belief in the importance of consumption of a 'low-fat' diet was associated with lower total and saturated fat intake, as well as lower fat-related diet habits (Waters & Satia, 2009). These results suggest that when an individual perceives a behavior as personally important, it is held as a value and/or presents benefit to the individual, and serves as a motivator to engage in that behavior. Personal importance can be considered as a proxy for personal values (Ong et al., 2017). Previous research has demonstrated that values are critical in decision-making, in that values influence attitudes, which consequently, influence behaviors (Dreezens et al., 2005; Schwartz et al., 2012). Individuals' desire to maintain consistency between their values and attitudes; hence why those who valued low-fat diets reported lower total and saturated fat intake. The social psychology principle of cognitive dissonance can provide theoretical support for this finding. According to cognitive dissonance theory (Festinger, 1957), people desire consistency between their actions and beliefs. When there are inconsistencies or dissonance between their beliefs/values and their behaviors, a tension emerges which must be mitigated by adjusting one's beliefs, behaviors or worldview (Festinger, 1957). Cognitive dissonance theory has been applied to food-related decision-making (Ong et al., 2017), such that individuals desire for their health behaviors to be consistent with health attitudes/beliefs. In regard to healthy eating, when individuals consider the behavior personally important, they will tend to act in accordance with this belief.

Finally, the present study also explored the role of racial centrality and healthy eating as in-group defining behaviors as potential moderators of the association between motivators/barriers and perceived importance of engagement in healthy eating. In the present sample, there is no evidence to suggest that the associations between motivators/barriers and importance is moderated by either racial centrality or health eating as in-group defining

behaviors. These results are contradictory to a prediction that can be derived from the identity-based motivation. In previous studies, perceptions of healthy eating as culturally discordant among African Americans has been associated with incorrect health knowledge, less engagement in healthy eating, and more fatalistic health beliefs (Oyserman et al., 2007). One potential reason for the null finding regarding racial centrality might be the limited variability in racial centrality score in the present study. The mean and the standard deviation of racial centrality in the current sample was higher and smaller (M = 5.96, SD = .79) than those in previous studies (M = 5.23, SD = 1.08). This may be in part due to period of heightened racial tension as an increased exposure to several murders of unarmed African American men and women (e.g., George Floyd, Breonna Taylor) during data collection.

Another potential explanation for the null finding with racial centrality as a moderator is that racial centrality on the Multidimensional Inventory of Black Identity (MIBI, Sellers et al., 1997) does not tap into the essence of culture and adherence to cultural traditions, but rather it assesses how important being a member of the African American/Black racial group is to an individual's self-image and sense of belonging. While centrality has been linked with some physical health outcomes (e.g., somatic symptoms; Rivas-Drake et al., 2008), it has not been examined in relation to health promotion behaviors such as healthy eating. In contrast, a similar construct—ethnocultural association that captures an individual's adherence to cultural norms—has been found to be positively associated with dietary fat intake among a sample of African American adults (Daroszeski et al., 2010). Future research should systematically assess which specific domains of racial identity are predictive of healthy eating among African American college students.

The present study also failed to provide evidence supporting healthy eating as an ingroup defining behavior as a moderator. One potential reason for the null finding might the difference in outcomes measured between the previous study and the current study. The previous studies that examined health promotion as an ingroup defining behavior treated this construct as an outcome of group membership, not as a predictor of the actual eating behaviors (Oyserman et al., 2007). Another reason might be simply that perceptions of healthy eating as an in-group defining behavior may not have been robust enough to alleviate the negative consequences of barriers to engagement in healthy eating.

Study 2 Methods

Study 1 demonstrated that, of those factors identified to shape healthy eating among African Americans in prior research, barriers (particularly low priority and negative attitudes) and personal importance were significantly associated with healthy eating in the current sample of African American college students. One major limitation with Study 1 was its inability to identify factors that are culturally unique to African Americans and are associated with healthy eating among African American college students. Study 2 aimed to address this limitation by conducting interviews and exploring culturally-relevant factors that drive decisions regarding healthy eating among African American college students.

Participants

Inclusion criteria were: 1) age 18 or older, 2) self-identified as African American, 3) enrolled in a college/university or recently graduated in 2020, and 4) self-reported that they engage in healthy eating for at least 4 days of the week based on responses on the HPBL. The

study was advertised on SONA as well as on several social media platforms including Facebook, Twitter, Instagram, VCU TelegRAM.

SONA participants who met the eligibility criteria during the screening were provided password to sign-up for an interview. SONA participants who completed a screening form were granted .25 research credits regardless of their eligibility status. Non-SONA participants who completed Study 1, were asked (in the same survey) if they would be interested in being contacted by the study staff to determine eligibility for Study 2. Those who responded affirmatively to recontact were contacted via email by the study staff to determine eligibility. The study staff re-contacted participants to set up an interview, if they were deemed eligible. The non-SONA participant who completed the interview were entered into a raffle to receive one of three $15 Amazon e-gift cards. Despite the recruitment effort, only one student participated in the interview. Thus, this study serves as a preliminary study.

Procedure

A student who met the eligibility criteria was invited to participate in a semi-structured, audio-recorded interview conducted by the researcher virtually via Zoom. The researcher provided objectives of the interview and consent form regarding recording and confidentiality of interview. Using an interview guide (See Appendix), the participant's narrative was collected regarding attitudes toward food, foods regularly consumed, challenges regarding eating healthy, and what resources are available to address these challenges. The interview guide was developed by adopting an existing interview guide (Airhihenbuwa et al., 1996; James, 2004) and consulting with two of the thesis committee members (Drs. Hagiwara and Jones). Example items include "How does being Black affect your food choice?" "What challenges do you experience in eating healthy?" and "What experiences have you had that have encouraged you to eat healthy?" The

guide aimed to assess the influence of culture on food choice as well as challenges to and resources for healthy eating in African American college students. The interview was conducted in July 2020 (during the COVID-19 pandemic).

Analysis Plan

The interview was transcribed verbatim and analyzed in four steps: (1) thought unitizations; (2) codebook development; (3) coding; and (4) theme identification. Step 1 consisted of unitizing thoughts from de-identified transcripts. Step 2 involved codebook development. Codes were developed *a priori* based on previous literature and PEN3 framework were used as the foundation for the codebook. The researcher then developed a list of comprehensive themes. To create higher-level categories, the data were analyzed inductively: that is, identifying themes, refining, and finally collapsing thought units into categories. The transcript codebook served as a guide for coding procedures, directions for coding, and provide examples of the codes. Step 3 consisted of coding the transcript. This was a recursive process, such that the codebook was revised during the coding period. Following this, the transcript was analyzed. Atlas.ti was utilized, as it enables researchers to categorize, sort and link transcripts. The final step involved identifying major cultural themes that promote healthy eating among African American college students through network mapping.

Reflexivity Statement

As a college-educated African American woman who engages in a healthy diet, I understand that my identity and personal investment in the topic may shape the project conceptualization, data collection, and thematic analysis. My personal journey to engaging in a healthier diet was marked by ostracization from family members, identity denial (accusations of "acting White") from friends, and observational learning of health-promoting behaviors from

non-Black individuals. Each of these experiences shaped my overall interest in understanding the lack of representation in obesity-reduction efforts (e.g., programming, non-profits, obesity-related health disparities research) and lack of overall behavioral engagement in healthy eating within the African American community. The overarching goal of my program of research is to increase the cultural relevance of healthy eating among African Americans by understanding how culture shapes perceptions of healthy foods, health-messages and social support for healthy eating. With each research question I ask in my program of research, I am narrowly focused on trying to address some aspect of this overall goal. This focus influenced the questions included in the interview guide, as well as the codebook developed for thematic analysis. Further, my own investment and excitement in the topic may have been conveyed in my paraverbal communication. Further, this transferred into the results reported for the present interview, as they may inherently reflect my own interpretation of the processes underlying culture's influence on dietary habits of African American college students, as opposed to purely reflecting their experiences. To combat this, I used network mapping and memoing to keep the data grounded in the participant's experiences and not my own. Lastly, my identity as an African American woman may help to reduce the researcher-participant dynamic by increasing overall relatedness to the participant. At each stage of the qualitative research process, I attempted to be mindful of how my identity and experiences shaped each outcome.

Study 2 Results

Demographics

The participant (pseudonym = Taylor) identified as an African-American female who is 24 years of age. She is entering her senior year at a 4-year institution in the Southeastern region of the US. The participant was identified as an individual who engages in a healthy diet, as she

indicated that she consumed a healthy diet on more than four days of the week, on the Health Promotion Behavior Log (HPBL).

A Definition of a Healthy Diet

Taylor defined a typical healthy diet as consisting of foods fruits and vegetables as well as foods that are not processed, low in carbohydrates, and have good fats. Additionally, a healthy diet includes minimal sugar-sweetened beverages and lots of water.

General Factors that Influence Engagement in Healthy Eating

Freedom

For Taylor, a newfound autonomy over her food choices aided in facilitating dietary change during her first year of college. "*When I got to college, [I had] more freedom over what I wanted to eat…"* This autonomy is contrasted with lack of control over what was prepared in the household during adolescence, "*I can just say growing up, I ate foods that weren't very healthy, because that's what was cooked in my culture."* Her newly discovered autonomy was also linked with increased access to different foods than she was exposed to during adolescence. She noted that lack of exposure to healthy foods as a major influence on healthy eating behaviors for her and other African Americans. "*A lot of African Americans don't have exposure to those healthy foods, when they do see them it's almost like 'why would I eat that or what is that?'"* Thus, autonomy coupled with access served as a unique motivator to healthy eating.

Exposure to Health Knowledge

During her first year of college, Taylor's health knowledge increased substantially through her enrollment in a nutrition course, where she learned a variety of nutritional concepts, such as the difference between healthy and unhealthy fats. Through her courses, she also gained practical knowledge of budget to prepare healthy meals throughout the week. "*I did a whole*

project on this basically like French fries versus getting a salad. It might be $1 for fries, but it might be $3 for the salad." Taylor also noted a generational shift in awareness of the importance of healthy eating among African American college students. "*…This generation of African Americans are trying to do a lot more and trying to do better than what we learned. We came into college with knowledge from our families. But we're trying to expand that. People are more skeptical about eating at McDonald's now [which] we weren't skeptical about 10 years ago…time has changed."* This, coupled with resources on campus, enables African American college students to overcome barriers to healthy eating. She noted widespread access to educational materials on the internet as a way to increase health knowledge, exposure to individuals modeling healthy eating and access to healthy eating recipes. "*You can go online and Google, "what's my water intake that I should be drinking."*

Modeling

Living with peers who engaged in healthy eating served as a significant influence on Taylor's health behaviors. "*Some of my other roommates, my freshman year, would cook in the kitchen… [their] influence over time made me want to be healthier*…" Through observation of their behaviors, Taylor was inspired to make changes for a healthier lifestyle. Additionally, peers who are modeling healthy behaviors or *"leading by example"* were noted as a resource for other college students to make sustainable dietary changes.

Cost

Cost of healthy foods when eating out at restaurants presented challenges in maintaining a healthy diet. Taylor noted that it is difficult to maintain a healthy diet, as the cost presents a barrier for herself and many college students. Places such as Whole Foods and Publix have healthier options, but often are more expensive than other grocery stores. She noted that students

with meal plans may experience fewer barriers to healthy eating than those who are unable to afford a meal plan. "*If you have a meal plan…then it might be a little different because you have the option to swipe somewhere for a salad. But if you're a college student who can't afford a meal plan then [your food choices] are limited, on top of not being able to work a full-time job."*

Built Environment

Taylor also highlighted the role of the built environment in the lack of healthy eating in African American households, including her childhood home. Limited physical access to full-service grocery stores, limited exposure to fresh foods (*"… I grew up in Florida, where we had to shop at Family Dollar or Dollar General, which aren't really actual grocery stores…")*, oversaturation of unhealthy restaurants ("*You'll see a Burger King or McDonalds in all those communities")*, and limited health knowledge on what constitutes a healthy diet (*"Knowledge of being able to properly read a nutrition label")* all pose as barriers to engagement in healthy eating.

Culturally-Relevant Factors that Influence Engagement in Healthy Eating

As discussed above, for Taylor, her experiences in college were epiphanic to her health knowledge, as consumption of a diet low in fat and sodium was not modelled in her home during adolescence. "*I can just say growing up, I ate a lot of foods that weren't very healthy because it was what was cooked in my culture…it was things that we ate all the time. But it's probably something you shouldn't eat four or five times a week."* Consistency of diet breeds a familiarity and preference that can be difficult to shift (Antin & Hunt, 2012; Capaldi, 1996). Taylor stated that this was a barrier to healthy eating not only for herself, but also for many African American college students. "*A lot of my friends that came from homes where their parents cooked meals*

that weren't necessarily healthy. So, when they got to college, it was the same foods they were trying to find."

Culture, Familiarity and Food Preference

This familiarity and preference may also explain why healthy eating is perceived as a "*culture shock*." Taylor stated that she has received criticism for her food choice, depending on the friend group. She receives praise on social media for posting *"zucchini noodles with chicken meatballs"*; yet, her African American friends would state, *"Oh that's white people stuff, why are you eating that?"* Taylor further explained that others assumed food was culturally-discordant if they lacked exposure or familiarity with a particular food. *"If we're not familiar with it, we just say that's a different culture's food."*

Interestingly, she noted that this denial of '*white people food'* was subconscious, rather than a conscious action. She qualified this with an example of choosing a restaurant with her friends. "*If I have a group of friends, and we're all Black. And we want to go somewhere to eat, 9 times out of 10 we're going to pick a Black owned restaurant, which is fine or a soul food place. Nobody is going to say let's go to Panera or to a different place [that would] be considered 'white people food.' No one is going to pick that. And I think it's just about the cultural acceptance as well. I don't think we do it consciously, I think it's a subconscious thing where it's like "oh, I'm black so we should eat here…"* Among culturally-significant foods, culturally-relevant cooking methods were discussed. Traditional culinary practices, such as frying, emerged as a contributor to decreased nutritional value in African American cuisine as well as some racial health disparities in chronic health conditions. Adding "*a lot of salt, and greasy things to our foods"* and adding "*a lot of seasoning"* were listed as reasons "*why African Americans are subjected to hypertension.*"

Family Health History

Cooking methods, which have been informed by African American culture (e.g., frying), may have long-term consequences for individual health. For Taylor, several family members experience chronic illnesses, which can be linked to dietary intake. With that, her family health history of diabetes and heart disease fueled Taylor's decision to make long-term dietary changes, "*It's a lot of different chronic illness that I don't want to get subjected to. So, I'm trying to stay on a healthier path, so that hopefully, I can avoid those things."* Thus, a desire to prevent poor health outcomes served as a motivator to engage in healthy eating. Prevention of chronic illnesses emerged as a potential motivator of healthy eating among African American college students in particular, in comparison to African American adults, who are often more reactive to present health conditions. *"I think older adults who already have those conditions try to make improvements sometimes, versus college students who are trying to avoid getting those conditions or they are trying to change their lifestyle from what they had before."*

Study 2 Discussion

Previous research has identified college as a critical period for development of health behaviors (Nelson et al., 2007), potentially due to increased autonomy (Laska et al., 2010). In the current study, Taylor provided her insights that are consistent with these previous findings. She also articulated that college provided an environment for increased exposure to different foods, which were not typically in her diet. This in conjunction with modeling from her peers increased her motivation to live a healthy lifestyle. Learning from peers who are engaging in healthy eating was noted as a means to overcome barriers to healthy eating, as they are *"leading by example."* Peer modeling might be important because it influences descriptive social norms—an individual's perceptions of their peer's behavior. Descriptive norms have been found to influence

intention and engagement in a particular behavior (Rimal, 2008). Social norms among friends were positively associated with fruit and vegetable intake in a large sample of diverse college students (Pelletier et al., 2015). More specifically, participants consumed .5 more servings of fruits and vegetables when they perceived their friends consistently ate fruits and vegetables. Additionally, social support from peers may serve as a motivation to engage in healthy eating (Harmon et al., 2016). Specifically, among college women, having friends that eat healthy is an important psychosocial factor which motivated healthy eating (Gruber, 2008; LaCaille et al., 2011).

Being in a college was also associated with barriers to healthy eating. Cost was reported as a barrier to engaging in and maintaining a healthy diet. This finding is consistent with previous research among college students, who have also stated cost as a deterrent to engagement in healthy eating (LaCaille et al., 2011). Additionally, the built environment poses a challenge to engagement in healthy eating such that students perceive limited availability of healthy food options around the university campuses (LaCaille et al., 2011; Sogari et al., 2018). The causal relation between built environment and weight outcomes among college students has been tested experimentally (Kapinos et al., 2014). In this study, incoming female freshmen were randomly assigned to residence halls, which varied on the proximity to full-service grocery stores (within ¼ mile vs. farther than ¼ mile) and dining halls' business hours (longer vs. shorter open-hours). Results indicated that students living in close proximity to a full-service grocery store reported gained 0.5 lb. less weight than those who lived farther from the grocery store. Additionally, students who had access to dining halls with longer hours, reported 1.14 lb. more weight gain over the course of a year, compared to students who had access to dining halls which were open shortest hours per day. Although the study did not assess the impact of the campus

built environment on the actual eating behaviors among college students, these results imply that campus built environment may influence students' weight outcomes through eating behaviors.

In addition to motivators and barriers faced commonly by college students in general, Taylor also discussed factors that are unique to African American college students. For example, food preference developed in adolescence was noted as being difficult to shift upon exposure to different food items in college. Previous research corroborates the present study's findings. In a systematic review of qualitative work assessing physical and mental health experiences of African American college students, food preferences were culturally engrained and making it increasingly difficult to shift to healthier food options (Barnett et al., 2019). Students noted that their bodies were "used to" or habituated to a particular diet (Barnett et al., 2019). Food preferences are also shaped by culture and traditional culinary practices (Antin & Hunt, 2012; Rozin, 1999). Family members serve as a source of health knowledge regarding preparation of health and traditional foods (Potter et al., 2016). "Sociocultural factors are even more important in food selection than intake control" (Rozin, 1999, pp.234). Family traditions continue to influence eating habits, even into adulthood (Potter et al., 2016), demonstrating why some African American college students may experience difficulty in initiating a healthy diet. This suggests that education materials and health professional recommendations should consider and address this deeply rooted cultural preference in order to have success in fostering contemplation, initiation or maintenance of behavior change. Health professionals and clinicians may be able to address this by expanding the concept of a "healthy diet" to include more culturally-significant foods, prepared via healthier cooking methods.

Finally, Taylor noted that she started eating healthier as a means of prevention of chronic diseases, which she witnessed her several of family members' experience. Other college students

have also reported watching family members experience "health crises" served as motivation to begin a healthy lifestyle (Potter et al., 2016). These results suggest that highlighting the opportunity to prevent the onset of chronic illnesses at this critical age could be an important strategy for nutrition professionals developing educational programs for college students.

Personal initiative to problem-solve seems to emerge as a major theme of resilience after examining both the motivators and barriers discussed by Taylor. Self-Determination Theory (SDT) can yield insight into understanding personal initiative. SDT posits that the need for relatedness, competence and autonomy fosters intrinsic motivation—engagement in a certain activity for its inherent satisfaction (Deci & Ryan, 2000). Relatedness reflects the need to belong and foster positive relationships through a behavior. Competence refers to an individual's abilities or competence in a particular behavior. Lastly, autonomy refers to freedom or choice to engage in a particular behavior. Regarding healthy eating, individuals are more motivated to eat a healthy diet when they value nutrition, understand the link between nutrition and health outcomes, view it as beneficial behavior (Blotnicky et al., 2015). For Taylor, experiences that bolstered all three elements associated with increased intrinsic motivation—the relatedness (e.g., peer modeling), competency (e.g., taking nutrition courses), and autonomy (i.e., freedom of food choice)—resulted in behaviors to achieve and maintain the desired goal of engagement in a healthy diet. Each of the aforementioned motivators may have allowed Taylor to be resilient and overcome barriers when they arose because she was intrinsically (as opposed to extrinsically) motivated to eat healthy. Specifically, autonomy yielded a freedom of food choice and allowed Taylor to select foods, which were aligned with her values to live a "healthier life." Coupled with autonomous food choice, peer modeling (i.e., preparing healthy meals) and increased knowledge (i.e., personal research, nutrition class) boosted her self-efficacy to engage in healthy eating, as

she understood what constitutes a nutritious, healthy meal and how to prepare one. For example, Taylor discussed taking initiative to research the components of a healthy diet. Although eating at restaurants presents a challenge in maintaining a healthy diet, *"if I go somewhere and the options are very limited then it is harder to stay on the healthier course"*, Taylor demonstrates personal initiative and overcomes this barrier by scoping out restaurant menus for healthy items prior to going out with friends, "*I like to do research before I go out…I look at the menu first to see what they have."* Additionally, she noted that she prepared her own food when visiting her family, "*So when I go home, I basically know [I have to] do my own thing. Because my family eats red meat and everything…it's something I don't eat anymore."* Personal initiative allowed Taylor to troubleshoot and overcome barriers to healthy eating when they arose.

Previous research conducted among African American women have also found similar themes of personal initiative. Participants reported "preplanning" as a strategy which enabled them to eat healthy consistently throughout the week, in a qualitative study (Doldren & Webb, 2013). Additionally, personal initiative may be another dimension of self-efficacy, which is individual's confidence in the abilities to engage in a particular behavior (Bandura, 1977, 2004), which plays a significant role in health behavior maintenance (Pekmezi, 2009). Prior research has identified self-efficacy as a significant correlate of fruit and vegetable intake (Shaikh et al., 2008; Trude, et al., 2016).

Overall Discussion

The overarching goal of the present studies was to identify culturally-relevant factors which promote healthy eating in African American college students. Study 1 assessed the generalizability of previously identified motivators and barriers to healthy eating to the eating behaviors of African American college students via survey methods. Study 2 sought to identify

culturally-relevant factors which shape healthy eating in African American college students by grounding the interview using the PEN3 Model from the development of the interview guide to thematic analysis. As discussed earlier, the PEN3 Model is useful for understanding the role of culture in health behaviors. The model highlights nine cultural elements, which are nested into three categories, which explore the role of cultural identity, relationships and expectations and cultural empowerment in shaping health behaviors. It has been used in previous research as a framework for understanding different factors which shape engagement in particular health behaviors among African Americans (Iwelenmor et al., 2014), including healthy eating (James, 2004). Notably, within the PEN3 framework, Study 2 qualitatively captured experiences of individuals who were characterized as "healthy eaters," a population which is often not targeted.

Personal values in and negative attitudes toward healthy eating emerged in both studies as critical factors influencing healthy eating in African American college students. While negative attitudes regarding healthy eating was significantly associated with decreased likelihood in healthy eating in Study 1, others barriers that do not directly reflect personal values and attitudes (i.e., cultural/family influences, availability, self-control) were not associated with healthy eating. Furthermore, perceived importance of healthy eating, which is a construct that captures an individual's values (Ong et al., 2017), were associated with engagement in healthy eating over and above significant barriers, suggesting that personal importance or value placed on healthy eating can supersede the effect of negative attitudes or low priority which may hinder engagement. In Study 2, an examination both the motivators and barriers discussed by Taylor resulted in personal initiative, which again reflects SDT (Deci & Ryan, 2000), as a major theme of resilience. Taken together, findings from the present studies highlight the foundational role of personal values in individuals' behaviors (Schwartz, 2012). Somewhat surprisingly, however,

very few studies have examined the role of personal values in healthy eating among African Americans (James, 2004).

Limitations

One of the biggest limitations of the current study is the small sample size and subsequent lack of power, which is mainly due to the Coronavirus Disease Pandemic (COVID-19). College students experienced major disruptions in course schedules during the pandemic. Courses, which were originally in-person, abruptly went to virtual platforms in March 2020. Given the unprecedented circumstance, many classes that required research credits as part of the final grades reduced the number of required credits, resulting in a significantly smaller participant pool. To compensate for the changes with class structure and the size of participant pool, I adopted study protocol to recruit participants via social media. To incentivize participation, I requested departmental funds to purchase six Amazon $15 e-gift cards. Even with these changes, participant recruitment was understandably slow because research participation is unlikely a priority for many college students during this historic pandemic. Findings reported in the thesis should be considered as preliminary findings (particularly $n = 1$ in Study 2) as I continue to collect additional data for more complete analyses.

Another potential limitation specifically due to COVID-19 is a major history threat to validity of the current findings (e.g., healthy eating engagement, racial centrality). This global health crisis has not only rattled nations' economies and health systems but also dismantled individual personal and professional routines. In addition to disruptions with course schedules, many college students also experienced major disruptions in housing accommodations. Students who lived on campus were required to retreat to other residences—for many this was their parents' homes. Amid all of this, many personal routines were shifted. Previous research has

found that routine is a significant motivator of healthy eating among African American adults (Nolan et al., 2016). With shifts in routine, many students may have experienced a significant change in motivation to eat healthy. Furthermore, as discussed earlier, emerging adulthood is an important period of increased autonomy in many activities including diets (Arnett, 2000); being in college and living on-campus away from family further fosters such autonomy (Cullaty, 2011). Students may have lost not only their sense of autonomy but also ability to exercise autonomy in diets after moving back in with their parents. While on campus, students have access to a variety of food items via dining services (Horacek et al., 2012). Parent homes may not have assortment of food items to the same extent as a full-service dining hall. Furthermore, the current study found that living off campus with parents was associated with less motivators to engage in healthy eating. Lastly, the COVID-19 Pandemic, and related stay-at-home orders, have led to increased anxiety and stress in general (Cooke et al., 2020). The pandemic was also coincided with historically heightened racial violence and injustice, resulting in a countless Black victims, including George Floyd, Breonna Taylor, and Rayshard Brooks. In previous research, stress has been directly linked to consumption of high-fat foods (Dallman, 2003), which has been found to have neurological benefits for individuals living in chronically stressful environments (Jackson et al., 2010). Taken together, the present findings should be interpreted in the current, unique historical context, and future research should empirically investigate whether findings from the present study can be generalized outside this historical context.

There are also several limitations that are unrelated to the COVID-19. The results of the current study only reflect the experiences of African American college students, and thus are limited in generalizability to African Americans in different developmental stages. Compared to college students who are a moderately homogenous population, there is considerable variation in

environment among African American adults in general, from physical access to income and financial access (Nolan et al., 2016). The larger African American adult population also varies in values and attitudes regarding healthy eating (Lucan et al., 2010). Furthermore, African American adults may also have less flexibility within their schedule due to work and family demands (Baruth et al., 2014), influencing perceptions of time as a barrier to engagement in healthy eating. While this study is limited in generalizability outside college students, the specific focus on African American college students is important theoretically for two reasons. First, experiences of college students are unique and different from African American adults in general. College is a unique developmental period, which is characterized by a sudden increase in sense of autonomy (Arnett, 2000). Second, prior research has shown mixed results, with some studies finding similar patterns of the results between African American college students and adults in general (James, 2004) while other studies findings divergent findings. For example, Darden (2014) has found that college students gain substantially more weight than their non-college counterparts. In contrast, Dhillion et al. (2019) found that college students experience similar structural and psychological barriers to healthy eating as adults. Just as there are racial disparities in prevalence of obesity amongst the general adult population, there are also racial disparities among college students (Sa et al., 2016). Yet, another study has concluded that the patterns of weight gain between college and non-college students fluctuate (Baum, 2016). More specifically, Baum (2016) reported that longitudinally, students with a college education report less weight gain over time although the effects of education on weight tended to subside with age, closing the weight gap between college and non-college students. Thus, overall there is little difference in weight gain among college and non-college students.

Finally, use of the Health Promotion Behavior Log (Nolan et al., 2016) in the current study to assess engagement in healthy eating is another potential limitation. First, although the HPBL has been found to be reliable in a sample of African American adults (α = .83), its predictive validity of actual engagement in healthy eating is yet to be tested empirically among African Americans. This limitation may have hindered the validity of inclusion criteria for the qualitative study, in that students reported their engagement in healthy eating at one particular timepoint, which was not an accurate capture of actual or consistent engagement in healthy eating. Additionally, because the measure lacks predictive validity, it is difficult to definitively determine if the motivators and barriers measured in the study were true and valid factors contributing to engagement in healthy eating. Secondly, in the current study, this measure was used as an indicator of "consistent engagement in healthy eating." However, the measure assessed healthy eating at one timepoint ("over the past week"). This limitation hinders the ability to make generalizable statements about regular healthy eating behaviors of African American college students. Despite these limitations, the HPBL was developed to highlight specific behaviors assessed on the Motivators and Barriers to Health-Smart Behaviors Inventory (Nolan et al., 2016). In addition, it is a succinct measure of dietary intake, lowering participant burden, and decreasing potential for survey fatigue. Future studies should utilize additional measures, particularly those that are predictive of actual engagement in behavior or capture daily food records. Lastly, because the study was cross-sectional in nature, temporal causality of study variables could not be determined. Future studies could assess these factors longitudinally to explore causality of motivators and barriers among healthy eating in African American college students.

Implications for Scholarship, Practice and Policy

The current study found that culture shapes food preference and cooking methods, which are deeply engrained and difficult to change upon transition to college. Additionally, the study found that values (i.e., perceived importance) and attitudes are important facilitators of engagement in healthy eating. Ultimately, these results suggest that culture in conjunction with values and attitudes are foundational aspects of motivation to engage in healthy eating among African American college students.

Fundamentally, the overall results demonstrate that values and attitudes play a pivotal role in healthy eating engagement among African American college students. According to the Schwartz theory of basic values, values are the foundation from which attitudes and beliefs emerge (Dreezens et al., 2005; Ong et al., 2017; Schwartz, 2012). Values shape attitudes, which resultantly shape behaviors (Dreezens et al., 2005). Shifting values can be challenging particularly when they are fundamental to individuals; however, it is not impossible to change values. For example, the use of dissonance-based interventions has been found to be effective in changing weight loss behaviors in clinical practice (Freijy & Koethe, 2013). Dissonance-based interventions seek to highlight discrepancies between individuals' values and behaviors, which create psychological dissonance—an uncomfortable psychological state that individuals are motivated to reduce (Festinger, 1957). Health professionals who seek to shift values and resulting attitudes regarding healthy eating among college students may consider dissonance-based interventions to foster personal importance of healthy eating. Interventions among African American college students should also take culture into consideration as the present studies also demonstrated food preferences, cooking methods, and general health knowledge are influenced by cultural traditions. For example, interventions can 1) *non-judgmentally* highlight culturally-

engrained food preferences and cultural traditions as values, and 2) expand the concept of healthy eating to include aspects of African American culture (e.g., significant foods) to increased relatedness.

Finally, consistent with prior research (LaCaille et al., 2011; Sogari et al, 2018; White et al., 2017), lack of access to full-service grocery stores and a saturation of unhealthy food restaurants were noted in Study 2 as factors contributing to lack of engagement in healthy eating among college students. College campuses should consider offering less dining hall hours (Kapinos et al., 2014), and/or consider converting campus convenient stores into smaller grocery stores that offer fresh produce. Alternatively, campuses should consider hosting pop-up farmers' markets on campus (Ward et al., 2014) to increase perceptions of and physical access to fresh, healthy foods.

Conclusion

Although previous research has indicated that racial health disparities exist in obesity at the collegiate level (Nelson, 2007), little is known about what specific factors that are unique to the African American experience contribute to these disparate rates (Darden et al., 2014). This study employed a mixed methods study design to identify factors that shape healthy eating among African American college students. Overall, results demonstrated the critical role of personal values (i.e., importance) and attitudes in healthy eating among African American college students. These results suggest that personal values in and attitudes towards healthy eating might be an important intervention target. Additionally, an interview with an individual who regularly engages in a healthy diet—a population whose experiences have rarely been captured—suggested that culture shapes food preferences, cooking methods, and attitudes regarding food, and thus is a key socialization agent in healthy eating behaviors. This further

suggests that any interventions that aim to promote healthy eating among African American college students should incorporate aspects of African American culture (e.g., significant food items, importance of family) to be effective.

Table 1

Participant demographics in Study 1

	M	*Freq*	*SD*	*%*	*Range*
Age (years)	20.23	--	8.33	--	*17-24*
Gender					
Women		55		87.3	
Men		7		11.1	
Transgender		1		1.6	
Year in school					
Freshman		14		22.2	
Sophomore		6		9.5	
Junior		14		22.2	
Senior		23		36.5	
Other- recent grads		6		9.5	
Race					
Black/African American		57		90.5	
Bi-racial		6		9.5	
Ethnicity					
African American		46		73	
Caribbean		1		1.6	
African American		3		4.8	
Latinx		1		1.6	
Multi-Ethnic		12		19	
Residential Arrangement					
On campus		37		58	
Off-campus alone/ roommate		12		19	
With parents		14		22	
BMI (kg/m^2)	26.51	--	5.71	--	16.74-46.59
Have a meal plan		22		34.9	
Food Security					
As a child		40		63.5	
As an adult		44		69.8	

Table 2

Descriptive Statistics of Study Variables

Variable	*M*	*SD*	*Range*
Predictors			
Engagement in healthy eating	3.49	1.51	.40-6.20
Motivators	2.86	0.31	2.26-3.48
Barriers	2.42	0.40	1.61-3.26
Moderator			
Racial Centrality	5.96	0.79	3.50-7.00
Healthy Eating as Black American Defining	2.65	0.61	1.50- 4.00
Healthy Eating as White American Defining	3.36	0.68	2.00-5.00
Outcome			
Importance of Healthy Eating	4.29	1.59	.60-7.00

Table 3

Bivariate correlations among study variables

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	.168	-.078	.265*	.308*	-.153	-.303*	-.210	.265*	-.045	-.062	-.067	.397**	-.125	-.002
2. Gender		-.090	.057	.069	.026	.081	.005	.185	.089	.081	-.238	.286*	.072	.152
3. Ethnicity			.003	-.087	.020	.017	-.036	.069	-.067	-.092	-.120	-.081	.035	.185
4. Figure Scale Rating				.853**	-.018	-.105	-.181	.157	-.260*	-.033	.311*	.052	-.008	-.174
5. BMI					.082	-.039	-.117	.219	-.274*	-.029	.261	.207	.021	-.110
6. Food Insecurity as Child						.841**	.501**	-.151	.318*	-.218	.051	-.219	-.071	.077
7. Food Insecurity as an Adult							.626**	-.145	.313*	-.227	.122	-.159	-.095	.135
8. Meal Plan								-.196	.173	-.140	.026	-.156	-.092	.074
9. Living off campus with roommates/alone									-.259*	.142	.012	.197	.151	.020
10. Living off Campus with parents										-.263*	.046	-.090	-.110	-.051
11. Motivators											-.583**	.088	.665**	.470**
12. Barriers												.039	-.525**	-.709**
13. Racial Centrality													.201	-.063
14. Importance														.618**
15. Engagement in healthy eating														

Note. * indicates $p < .05$, ** indicates $p < .01$.

Table 4

Regression coefficients for engagement in healthy eating from Model 4

Step		*β*	*SE*	*p*
	Covariates			
1	Figure scale	-.21	.18	.17
	Off campus w/ roommates/alone	.04	.53	.80
	Off campus w/ parents	-.09	.55	.54
2	Barriers	-.59	.49	.001
3	Motivators	-.17	.70	.27
4	Importance	.42	.13	.003

Table 5

Covariate-adjusted Regression coefficients for barriers to healthy eating from post-hoc analysis

	β	*SE*	*p*
Cultural/familial influences	-.04	.40	..75
Low priority	-.31	.27	.02
Negative attitudes	-.44	.35	.001
Availability	.10	.29	.41
Self-control	-.23	.36	.08

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Appendices

Study 1 Measures

Screening Form

Please answer the following questions about your demographic information.

1) What is your current age?[WRITE IN]

2) What is your classification?
   a. Freshman
   b. Sophomore
   c. Junior
   d. Senior
   e. Other (Specify)

3) What one race/ethnicity do you consider yourself?
   a. Asian American
   b. Black/African American
   c. Latino/Hispanic American
   d. Native American
   e. White/Caucasian American
   f. Other/multiracial (Specify)
   g. International student (Specify nationality)

4) What is your gender identity?
   a. Male
   b. Female
   c. Transgender
   d. Non-binary
   e. Not listed here (please specify: _____)
   f. Decline

5) What was your residential arrangement immediately before the COVID-19 pandemic?

   a. Live on campus (alone or with roommates)
   b. Live off campus (alone or with roommates)
   c. Live off campus with parents
   d. Other living arrangements, (please specify:_____)

6) What is your current residential arrangement during the COVID-19 pandemic?
   a. Live on campus (alone or with roommates)
   b. Live off campus (alone or with roommates)
   c. Live off campus with parents
   d. Other living arrangements, (please specify:_____)

7) What undergraduate institution do you currently attend? (Please type the full name of your institution)

[WRITE IN]

8) How did you hear about this study?
    a. SONA Advertisement
    b. Word of Mouth
    c. Organizations
    d. Professor
    e. Twitter
    f. Facebook
    g. Instagram
    h. VCU TelegRAM
    i. Other (please specify:_____)

Participant Measures

Demographics

2) Please indicate your age below. [TYPE IN RESPONSE]
3) What is your gender identity?
    a. Male
    b. Female
    c. Transgender
    d. Non-binary
    e. Not listed here (Specify: _____)
    f. Decline

4) What is your classification?
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. Other, please specify_____

5) What was your residential arrangement immediately before the COVID-19 pandemic?

    a. Live on campus (alone or with roommates)
    b. Live off campus (alone or with roommates)
    c. Live off campus with parents
    d. Other living arrangements, (please specify:_____)

6) What is your current residential arrangement during the COVID-19 pandemic?
    a. Live on campus (alone or with roommates)
    b. Live off campus (alone or with roommates)
    c. Live off campus with parents
    d. Other living arrangements, (please specify:_____)

7) During the academic year, do you typically have a meal plan through your institution's dining services?
    a. Yes
    b. No
8) While growing up, was there ever a time when your family received any form of public assistance from the government such as welfare, TANF, WIC, public housing, section eight housing, Medicaid, or food stamps?
    a. Yes
    b. No
    c. Don't know
9) Are you currently receiving any form of public assistance from the government such as welfare, TANF, WIC, public housing, section eight housing, Medicaid, or food stamps?
    a. Yes
    b. No
    c. Don't know
10) What races do you consider yourself to be (mark ALL that apply)?
    a. Black □1
    b. White/Caucasian/Anglo-Saxon □2
    c. American Indian or Alaska Native □3
    d. East or Southeast Asian □4
    e. Native Hawaiian or other Pacific Islander □5
    f. Other (specify below): □6
11) What is your ethnicity (mark ALL that apply)?
    a. African American □1
    b. Caribbean (specify below) □2
    c. African (specify below): □3
    d. Spanish/Hispanic/Latino (specify below): □4
    e. Other (specify below): □5

12) [If African American is selected] Were you born in the US?
    a. Were either of your parents born outside of the United States? (If yes, indicates second generation student)
        i. Yes/No
    b. Were both of your parents born in the US?
        i. Yes/No
13) Were you born outside of the US?
    a. Do you have US citizenship?
        i. Yes/No (if yes, first-generation immigrant; if no, immigrant status)

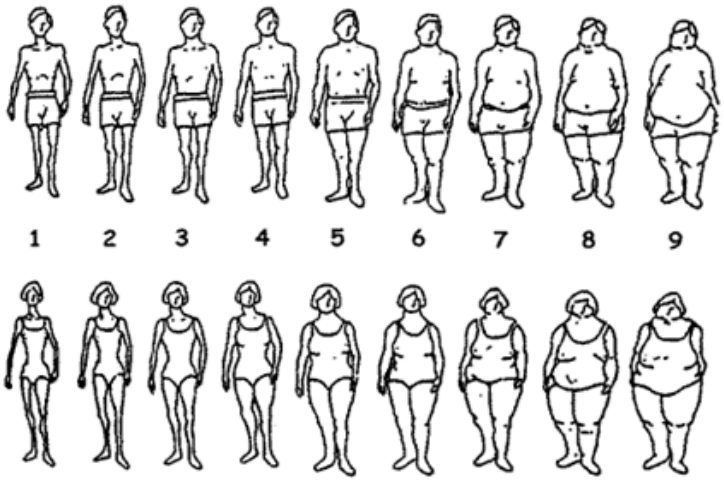
14) What is your height in inches? (i.e., 12 inches = 1 foot. For example, If you are 5ft 4in, you are 64 inches tall.)

15) What is your weight in lbs?

Participant Measures

Figure Rating Scale

Please select the silhouette that you feel best represents your current body size on a scale of 1 to 9.



Motivators and Barriers of Health-Smart Behaviors Inventory (MB-HSBI) [Healthy Breakfast and Healthy Food and Snacks]

The following items are statements about why people choose to eat healthy foods. Please indicate how true each statement is to you on the following scale: 1 (strongly disagree), 2(disagree), 3 (agree) and 4 (strongly agree).

Healthy Breakfast—Motivators (14 items)

Desire to be healthy

1) I am trying to lose weight, and I think eating a healthy breakfast each morning will help.
2) I think you have to eat breakfast if you want to be healthy.
3) It is my job as a role model for my kids or for someone else important in my life.
4) I think that eating a healthy breakfast will help prevent me from getting diseases.
5) I want to have a healthy body weight, and I think eating a healthy breakfast is better for that than skipping breakfast.
6) I think about how I might feel hungry or bad later if I do not eat breakfast.
7) It is one way that I keep myself healthy.

Availability

8) If I want healthy breakfast foods, I can get them.
9) I have time to eat breakfast if I want to.

When someone else makes me a healthy breakfast, I eat it.

Familial Influences

10) I always ate a healthy breakfast as a child.
11) Other people in my family eat a healthy breakfast.
12) Growing up, my parent told me about the importance of eating a healthy breakfast.
13) Healthy breakfast foods are the foods I am used to eating.

Healthy Breakfast—Barriers (8 items)

Cultural/Familial Influences

14) My culture's traditional breakfast foods are not very healthy.
15) I cannot tell which cereals are the healthy ones.
16) I am confused about which breakfast foods are healthy and which ones are not.
17) I want to eat something sweet in the morning.
18) Other people in my family usually do not eat healthy breakfasts.

Low Priority

19) I would rather sleep late and skip breakfast.
20) I do not have time to get ready in the morning and also eat a healthy breakfast.
21) To me, "eating a healthy breakfast" means taking a long time to prepare something.

Healthy Foods and Snacks—Motivators (20 items)

Routine

22) Eating healthy foods is part of my regular routine.
23) I eat healthy foods every day so that I can be healthy.
24) I have the discipline to eat healthy.
25) I have a personal goal of eating healthier snacks.

Availability

26) I like the taste of most fruits and vegetables.
27) Fruits and vegetables can easily be eaten without being cooked.
28) Fruits and vegetables (fresh or frozen) are usually available in my home.
29) I like to add variety to what I eat by trying new fruits and vegetables.

Health Benefits

30) Eating healthy foods and snacks helps me look good.
31) Eating healthy foods keeps my body in shape.
32) Someone has taught me why fruits and vegetables are healthy.
33) I think about what could happen if I eat too many unhealthy foods.

34) Eating healthy foods helps me to be physically active.

Medical Issues

35) I am concerned about preventing diabetes.
36) I am concerned about preventing high blood pressure.
37) I am concerned about preventing high cholesterol.
38) I have a health or medical condition and need to eat healthy because of it.

Convenience

39) I can find healthy snacks that come in handy, small packages.
40) There are healthy options at most restaurants that I go to.
41) Healthy snacks come in little packages that help me to not eat too much.

Healthy Foods and Snacks—Barriers (15 items)

Negative Attitudes

42) I just do not care about eating fruits and vegetables every day.
43) I do not like the taste of most vegetables.
44) When I go to the grocery store, I do not specifically think about buying fruits or vegetables.
45) I just do not care about eating healthy every day.
46) When I make or buy a meal, I do not think about whether or not it has fruits or vegetables in it.
47) I do not like to try new fruits or vegetables that I have never had before.
48) When I think "healthy food", I think "tastes bad."
49) I do not look or feel any different when I eat healthy.

Availability

50) Fresh healthy foods are not easily available.
51) I cannot get healthy snacks in the snack machines.
52) Healthy foods are not easy to find at restaurants.

Self-Control

53) I get cravings for unhealthy foods.
54) I crave sweets or junk food instead of fruit as a snack.
55) When someone cooks or gives me unhealthy food, I eat it.
56) When there are unhealthy foods at home, it is hard to choose healthy foods.

Health Behaviors Importance Rating Form

Directions: Do NOT write your name on this questionnaire. Please think about how important it is to you to do each of the behaviors listed below on a daily basis. On a scale of 0 to 7,with "0" meaning "Not at all important" and "7" meaning "Extremely important," how important is it to

you to do each of these behaviors on a daily basis? For each question, please select your option from the matrix:

How important is it <u>to you</u> to…

1) …eat a healthy breakfast each day?
2) …eat fruits each day?
3) …eat vegetables each day?
4) …eat whole grains (such as brown or wild rice, whole wheat bread, oatmeal, or whole-grain cereal) each day?
5) …eat healthy foods and snacks that are low in calories, salt, and fat each day?

Health Promoting Behavior Log

Directions: Think about your behaviors in a typical week. How many days out of a typical week do you do each of the behaviors listed below? For each question, please select one option from the matrix.

On <u>how many days of the week</u> did you…

1) …eat a <u>healthy</u> breakfast?
2) …eat 2-3 servings of fruit?
3) …eat 2-3 cups of vegetables?
4) …eat whole grains (such as brown or wild rice, whole wheat bread, oatmeal, or whole-grain cereal)?
5) …eat healthy foods and snacks that are low in calories, fat, and sodium instead of foods and snacks that are high in calories, fat, and sodium?

Culture and Cuisine

Could you describe three foods that represent African American culture? [WRITE IN]

Health promotion as an in-group defining behavior

For each of the behaviors listed below, please indicate how representative those behaviors are for the following:

<u>White middle-class Americans</u>

1) Eating a healthy breakfast: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
2) Eating fruits and vegetables: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
3) Eating whole grains: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
4) Eating healthy foods and snacks that are low in calories, fat, sodium: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical

White lower-class Americans

1) Eating a healthy breakfast: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
2) Eating fruits and vegetables: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
3) Eating whole grains: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
4) Eating healthy foods and snacks that are low in calories, fat, sodium: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical

Black middle-class Americans

1) Eating a healthy breakfast: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
2) Eating fruits and vegetables: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
3) Eating whole grains: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
4) Eating healthy foods and snacks that are low in calories, fat, sodium: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical

Black lower-class Americans

1) Eating a healthy breakfast: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
2) Eating fruits and vegetables: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
3) Eating whole grains: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical
4) Eating healthy foods and snacks that are low in calories, fat, sodium: (1) very atypical (2) somewhat atypical (3) neither atypical nor typical 4) somewhat typical 5) very typical

Multidimensional Inventory of Black Identity

Please indicate your agreement with the following statements on a scale of 1(strongly disagree) to 7 (strongly agree).

1. Overall, being Black has very little to do with how I feel about myself. (reverse scored)

2. In general, being Black is an important part of my self-image.

3. My destiny is tied to the destiny of other Black people.

4. Being Black is unimportant to my sense of what kind of person I am. (reverse scored)

5. I have a strong sense of belonging to Black people.

6. I have a strong attachment to other Black people.

7. Being Black is an important reflection of who I am.

8. Being Black is not a major factor in my social relationships. (reverse scored)

Study 2 Interview Guide

1. **SAY:**

   "You've been invited to be part of the study because you were identified as someone who consistently eats healthy."

   "We know that there are many barriers to healthy eating, such as limited access to fresh foods and lack of skills to prepare healthy meals. However, we don't know much about what factors help people eat healthy."

   "So, we are interested in what helps you eat healthy and why. I am here to learn what makes it easy and difficult for you to engage in healthy eating.

2. **SAY:**

   "Again, I am here to *learn from you*. So, we invite you to provide anything that comes to mind."

   "Also, please don't hesitate to ask me to restate or clarify a question at any time during the interview."

   "Finally, I want to remind you that you may decline to answer any questions or you may end the interview at any point."

   "Do you have any questions before we begin?" **[wait for participant questions, and answer any questions]**

3. Questions about concepts of healthy eating

   a. **SAY:** *I am going to start with a question about your definition of healthy and unhealthy eating.*

      i. What comes to mind when you hear the term "healthy eating"?

      ii. In your opinion, what makes food healthy or unhealthy?

      iii. Do you think these definitions are consistent with how other people in general define healthy and unhealthy eating? * When I say other people in general, I mean people of all races, ages, gender, etc.

1. Why or Why not?

4. <u>Question about participant behavior</u>

   a. **SAY:** *Next, I am going to ask you about your actual eating habits. Your responses to the screening survey indicated that you are someone who engages in healthy eating consistently.*

      i. Do you make conscious decisions to engage in healthy eating? (Can rephrase to, *Do you make conscious efforts to eat healthy?*) (Participant will give a response here… then branch to YES or NO questions)
         1. If YES:
            a. Why do you choose to eat healthy?
               1) *Probe*: **[summarize factors *P* mentions].** Explore additional *person-level* factors (e.g., appearance, feel better, motivation) and some *situational/environmental* factors (e.g., cost of foods, limited access to grocery stores, advertisements on TV).

            b. Is it difficult for you to maintain healthy eating?

            c. What are some barriers you often face when trying to eat healthy?
               1) *Probe*: **[summarize factors *P* mentions].** Explore additional *person-level* factors (e.g., appearance, feel better, motivation) and some *situational/environmental* factors (e.g., cost of foods, limited access to grocery stores, advertisements on TV).

            d. What do you do to help you maintain healthy eating when you are facing those barriers?

         2. If NO:
            a. Why do you choose to eat healthy?
               1) *Probe*: **[summarize factors *P* mentions].** Explore additional *person-level* factors (e.g., appearance, feel better, motivation) and some *situational/environmental* factors (e.g., cost of foods, limited access to grocery stores, advertisements on TV).

b. Are there any occasions that make it easier or harder for you to stick to your usual healthy diet?

c. When it becomes harder for you to stick to your usual healthy diet, what do you do? Why?

5. Challenges to healthy eating specifically among African American **college students** like yourself.

a. **SAY:** *We've asked you to think about some different things that motivate or hinder you from eating healthy. You've mentioned XX and XX* ***[insert from participant's answer from previous questions].***

Now, we would like you to think about some of the factors that affect healthy eating in other African American college students. College students, like yourself, are going through a critical developmental transition in which they face increased independence and responsibilities for many things including food choices. Think about African American college students when answering the next few questions.

i. What challenges do you think other African American college students face when trying to eat healthy?

1. Why do you think many African Americans college students face these challenges?
2. *Probe*: **[summarize factors *P* mentions].** Explore additional *person-level* factors (e.g., appearance, feel better, motivation) and some *situational/environmental* factors (e.g., cost of foods, limited access to grocery stores, advertisements on TV).

ii. Which foods do you think are most difficult for many African American college students to give up?

1. *Probe:* Do those foods have any special meaning? How? Why?

iii. Do you think college students' food choices change when they go home to visit family?

1. *Probe:* For example, when you go home for holidays or special events (e.g., birthdays), do you find it is harder to eat healthy?

2. Why or why not?

3. Do you think other African American college students receive support from their families to eat healthy? Why or why not?

6. <u>Resources that enable healthy eating specifically among African American **college students**</u>

    a. **SAY:** *Despite challenges, you-- as someone who regularly eats healthy—are able to maintain a healthy diet. Now, I would like you to think about resources that are available to help other **African Americans college students** eat a healthy diet.*

        i. What resources do you think other African American college students have that allow them to be resilient and overcome challenges to eat healthy?

            1. *Probe:* For example, some of these resources could be people in family or friend groups that eat healthy, financial resources, or knowledge of how to prepare healthy foods.

        ii. What motivates other African American college students to eat healthy?

            1. *Probe:* What do you think are some reasons that they choose to eat healthy despite these challenges they face?
            2. *Probe*: **[summarize factors *P* mentions].** Explore additional *person-level* factors (e.g., appearance, feel better, motivation) and some *situational/environmental* factors (e.g., cost of foods, limited access to grocery stores, advertisements on TV).

10. <u>Challenges and resources among African Americans in general</u>

    b. **SAY:** *We've discussed several factors that promote or hinder healthy eating amongst yourself and African American college students. Some of those things include XX,XX, and XX **[insert P's statements from previous questions]**.*

    *Now, I would like you to think about **African Americans in general.***

        i. Are there any challenges to healthy eating unique to African Americans in general?

            1. Why do you think they face those challenges?
                a. Probe: **[summarize factors *P* mentions].** Explore additional *person-level* factors (e.g., appearance, feel better, motivation) and some *situational/environmental* factors

(e.g., cost of foods, limited access to grocery stores, advertisements on TV).

2. Are there any foods you think are difficult for African Americans to give up?

ii. Are there any factors that allow African Americans in general to overcome these challenges?

1. *Probe:* Some of these resources could be people in family or friend groups that eat healthy, financial resources, or knowledge of how to prepare healthy foods.

2. Do you think that African Americans in general are motivated to eat healthy for similar or different reasons as African American college students?
   a. Why or why not?
   b. *Probe*: **[summarize factors *P* mentions].** Explore additional *person-level* factors (e.g., appearance, feel better, motivation) and some *situational/environmental* factors (e.g.,cost of foods, limited access to grocery stores, advertisements on TV).

11. Food and Culture

SAY: *For the last set of questions, I would like for you to think about food within African American culture.*

If you would, please describe foods that you think represent the African American culture?

3. Would you say that those foods are healthy or unhealthy?

4. Why?

iii. What comes to your mind when you hear the phrase "eating habits of Black/African Americans?"

1. Probe: Do most African Americans eat healthy or unhealthily?

2. What does a *typical* Black/African American diet look like?

   a. What are good parts about the diet?

b. What are not so good parts about the diet?

iv. How does being African American influence food choices?

1. Probe: How do you think race and culture influence food choices?

7. Closing

a. Summary of topics discussed

i. **SAY: "**We've reviewed a lot of topics including the definition of healthy eating, how race and culture may influence food choices, and how being a college student may influence your resources to eat healthy.

ii. Did I miss anything or is there anything you would like to add?

1. Any ways the COVID-19 may have affected your current diet?

b. Reminder of confidentiality

i. **SAY:** "This will conclude the interview. Thank you very much for sharing your thoughts today. Now, I will stop the audio-recording." **[Stop the recording]**

"Just to remind you, this interview will be kept confidential and secure. The audio-recording of this interview will be transcribed and analyzed by research assistants who have undergone research ethics training. No identifiable information, such as your names, will be attached to the transcript."

"Do you have any questions or concerns about confidentiality?"

c. Provide contact information of Research Team

i. **SAY:** "You can contact the study team at any point if you have questions or concerns. Their contact info is located on the information sheet that I sent you at the beginning of the interview via chat . I encourage you to download to keep for your records."

"Thank you so much for your time and cooperation again. It was so nice talking with you. Have a great day!"